DOCUMENT RESUME

ED 348 482 CE 061 671

TITLE	Impact of Technology on the Family. Teacher Edition.
INSTITUTION	Mid-America Vocational Curriculum Consortium, Stillwater, Okla.
PUB DATE	92
NOTE	243p.; Written by a team of Oklahoma Home Economics Teachers.
AVAILABLE FROM	Mid-America Vocational Curriculum Consortium, Inc., 1500 West Seventh Avenue, Stillwater, OK 74074-4364 (order no. 302501).
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Basic Skills; *Child Development; Clothing; Competency Based Education; *Consumer Education; *Family Health; *Family Life; Fashion Industry; Food; Home Economics Education; *Homemaking Skills; Instructional Materials; Job Skills; Nutrition; Secondary Education; Teaching Guides; *Technological Advancement; Textiles Instruction
IDENTIFIERS	Technology Education

ABSTRACT

These instructional materials create an awareness of new technological innovations and how they affect personal and family life. This teacher's guide is for instructing secondary students enrolled in a home economics program. The following introductory information is included: use of this publication, competency profile, instructional/task analysis, related academic and workplace skills list, and 84 references. Eight units of instruction are provided on the following topics: (1) orientation (Deborah Segraves); (2) family living (Marcy Carrick); (3) child development (De Ann Pence); (4) individual and family health (Brenda Brixey); (5) food and nutrition (Cathy James); (6) consumer education (Ruth Knight); (7) housing and home management (Linda Gregory); and (8) clothing and textiles (Pat Kellner). Each unit contains some or all of the following sections: objective sheet; suggested activities; assignment and written test answers; written test; unit evaluation form; teacher supplements; transparency masters; information sheet; student supplements; assignment sheets; job sheets; and dissemination material. (NLA)

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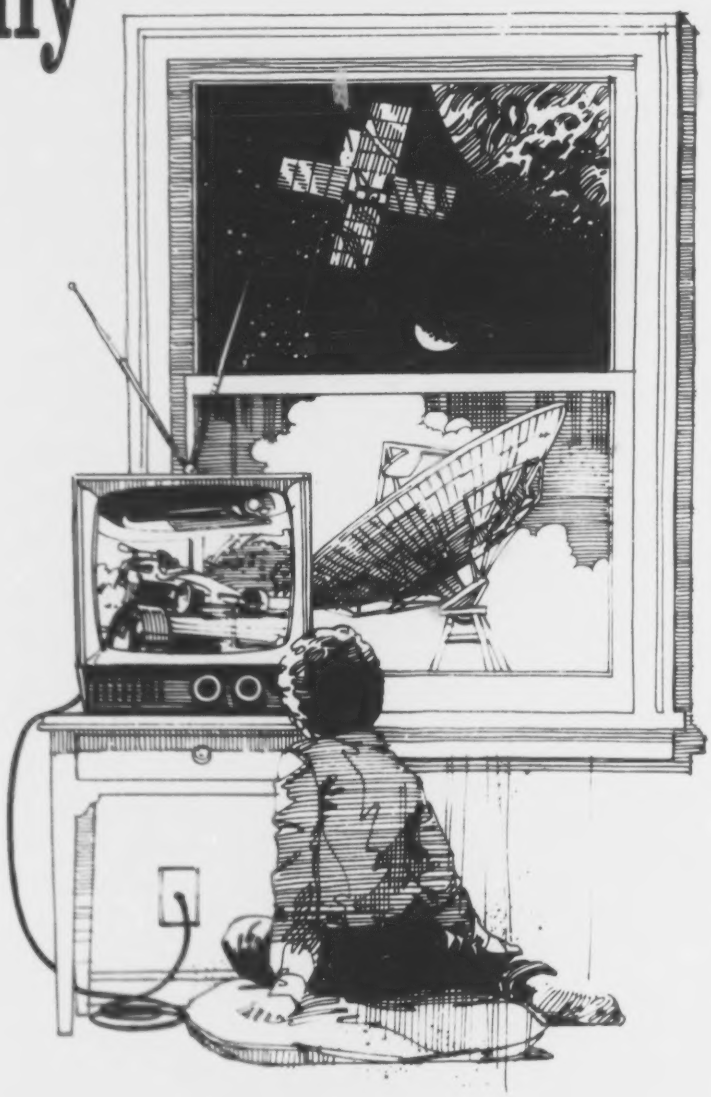
Impact of Technology on the Family



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Teacher Edition

MAVCC

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Impact of Technology on the Family

Written by

A Team of Oklahoma Home Economics Teachers

Deborah Segraves (Unit 1), Marcy Carrick (2), DeAnn Pence (3), Brenda Brixey (4)
Cathy James (5), Ruth Knight (6), Linda Gregory (7), and Pat Kellner (8)

Project Coordinated by

Mary Kellum

Developed by

The Mid-America Vocational Curriculum Consortium, Inc.

Board of Directors

Larry Nelson, South Dakota, Chairman
Carol Fagan, Kansas, Vice-Chairman
Mervin Birdwell, Louisiana, Parliamentarian
Jean McEntire, Arkansas
Russell Blackman, Colorado
Margaret Ellibee, Iowa
Harley Schlichting, Missouri
Ann Masters, Nebraska
Ann Benson, Oklahoma
Claudia Leppert, Oregon
Sylvia Clark, Texas

Jim Steward, Executive Director

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Printed in the United States of America by the
Oklahoma Department of Vocational-Technical Education
Stillwater, OK 74074-4364

Mid-America Vocational Curriculum Consortium, Inc.
1500 West Seventh Avenue
Stillwater, OK 74074-4364

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Impact of Technology on the Family

Teacher Edition

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Foreword

The Mid-America Vocational Curriculum Consortium (MAVCC) was organized for the purpose of developing competency-based instructional materials for its member states. *Impact of Technology on the Family* is in response to the changes being made to diversify the home economics education curriculum. The target audience for this publication is secondary students enrolled in a home economics program. These materials may be integrated into existing instructional materials or utilized as a new program area.

The primary objective of the *Impact of Technology on the Family* publication is to create an awareness of new technological innovations and how they affect our personal and family life. This publication is only the starting point. Teachers are encourage to read the suggested activities section for each unit of instruction. These materials are designed so that teachers may localize, personalize, and supplement each unit of instruction to fit their situation. Every effort has been made to make these materials basic, readable, and by all means, usable. We have identified the basic academic and workplace skills that are being reinforced and offered suggestions on strategies that might enhance the teaching of all basic skills.

The success of this publication is due to the technical writers, committee representatives, and curriculum specialist who brought with them the technical expertise and commitment to improve student performance.

As you use these instructional materials, we hope you will find they contribute to the improvement of the instructional process. If any problems occur or if you have suggestions for improvement of these materials, call or write us.

Larry Nelson, Chairman
Board of Directors
Mid-America Vocational
Curriculum Consortium

Jim Steward
Executive Director
Mid-America Vocational
Curriculum Consortium

Acknowledgements

Appreciation is extended to those individuals who contributed their time and talent to the development of *Impact of Technology on the Family.*

The contents of this publication were planned and reviewed by the following members of the Mid-America Vocational Curriculum Consortium family and technology committee:

Denise Ebert
GF Furniture System
Lenexa, Kansas

Sandra Flinton
Oklahoma Natural Gas
Tulsa, Oklahoma

Bettie Ann Harwood
University of Arkansas
Bella Vista, Arkansas

Donna Kates
Oklahoma Department of Vocational and Technical Education
Stillwater, Oklahoma

Martin McGrane
Sioux Valley Electric Cooperative
Colman, South Dakota

LeAnn Nelson
LeAnn Nelson Presents
Denver, Colorado

Mary Petersen
Department of Education
Des Moines, Iowa

Cynthia Phillips
Department of Education
Jefferson City, Missouri

Carol Ward
Minnegasco
Lincoln, Nebraska

We wish to thank this committee for their input and assistance in developing this publication. We also want to thank Jim Steward and Jane Huston for their assistance in writer training and committee facilitation.

Special appreciation is extended to the employees of the Graphics Division of the Oklahoma Department of Vocational and Technical Education for the artwork, phototypesetting, and printing of this text.

Thanks are also extended to Mary Kellum, MAVCC Curriculum Specialist, for her assistance with the editing of this book, as well as the coordination of the project.

Use of Introductory Materials

Introductory materials are included in the teacher guide only and contain useful information to assist administrators and teachers in planning for instruction.

In addition to the general information such as the table of contents, foreword, and acknowledgements page, information is included on the following:

1. **Use of this publication**—Explains the components of a unit of instruction and how they should be used as part of the teaching/ learning process.
2. **Competency profile**—Provides a record of student performance for each task included in a unit of instruction. This becomes a part of the student's permanent records and should be utilized when directing the student toward employment opportunities.
3. **Instructional/task analysis**—Provides a quick review of contents of the publication; identifies cognitive (knowledge) skills and psychomotor (doing) skills addressed in each unit of instruction.
4. **Related academic and workplace skills list**—Classifies unit tasks (assignment sheets and job sheets) according to related academic and workplace skills being reinforced. Skill areas reflected by skill groups, sub skills, and descriptions have been identified using *Workplace Basics: The Skills Employers Want*, developed by the American Society for Training and Development (ASTD) and the U.S. Department of Labor and adapted by MAVCC.
5. **Reference list**—Provides a comprehensive list of resources used in the development of this publication.

As you use these materials, it is hoped that they will provide useful information to meet a variety of needs.

Use of This Publication

Instructional units

Impact of Technology on the Family contains eight units of instruction. Each instructional unit in a teacher guide includes some or all of the following basic components of a unit of instruction: objective sheet, suggested activities for the teacher, answers to assignment sheets, answers to written test, written test, unit evaluation form, teacher supplements, transparency masters, information sheet, assignment sheets, student supplements, and job sheets.

All of the unit components focus on measurable and observable learning outcomes. Teachers are encouraged to supplement, personalize, localize, and motivate with these materials in order to develop a complete teaching/learning process.

Units of instruction are designed for use in more than one lesson or class period of instruction. Careful study of each unit of instruction by the teacher will help to determine the following:

- Amount of materials that can be covered in each class period.
- Skills that must be demonstrated.
- Amount of class time needed for demonstrations.
- Amount of time needed for student practice.
- Supplementary materials, including print and nonprint media and equipment and supplies, that must be ordered.
- Resource people who must be contacted.

Objective sheet (Color code: White)

Each unit of instruction is based on performance objectives which state the goals for successful completion of the course. These performance objectives are stated in two forms: unit objectives which state the expected performance of each student after completion of the unit of instruction, and specific objectives which state what the student must do to reach the unit objective.

The objectives should be provided for students and stressed throughout the teaching/learning process. This will help answer any questions concerning performance requirements for each instructional unit. The objectives can also help determine teaching strategies and instructional methods. Teachers should prepare for each unit by deciding how each objective can best be taught.

Teachers should feel free to modify, delete, or add objectives in order to meet the needs of the students and community. When objectives are added, the teacher should remember to supply the needed information, assignment and/or job sheets, and criterion test items.

Suggested activities (Color code: Pink)

This component is included only in the teacher guide. The suggested activities assist teachers during the preparation stage of the teaching/learning process by providing an instructional plan, teaching suggestions, and a list of supplemental resources. Ways to integrate academic and workplace skills have been included in the teacher suggestions, and skill areas have been noted in bold. (A table of academic and workplace skills with accompanying definitions has been provided on page xv.) The teacher should read the suggested activities before teaching the units and decide how each objective can best be taught. Time should also be allowed to obtain supplemental materials, prepare audiovisual materials, and contact outside resources. Duties of the teacher will vary according to the particular unit.

References used in the development of each unit are listed in the suggested-activities section, along with suggested supplemental resources that may be used to teach the unit. These materials can be used by the teacher to supplement her or his knowledge of the subject area or to help students with particular interests or objectives in the area covered.

Instructions for evaluating student performance on the job sheets are also included in the suggested-activities section. Teachers should select and discuss with students the rating scale that will be used.

Assignment and written test answers (Color code: Pink)

Assignment-sheet answers and written-test answers are designed to assist the teacher in evaluation of student performances.

Written test (Color code: Yellow)

This component provides criterion-referenced evaluation of every cognitive objective listed in the unit of instruction. The test appears in the teacher guide only, but duplication is permitted for student use. If objectives have been added, deleted, or modified, appropriate changes should be made on the written test. It is recommended that the tests be divided into shorter tests covering three or four objectives at a time and given soon after those objectives have been covered. A selection of test items from the units covered may be used for final tests at the end of each term if desired.

Unit evaluation form (Color code: White)

This sheet provides teachers with a record of each students performance on a unit of instruction. It includes space for assignment sheet ratings, job sheet ratings, written test scores, and teacher comments. The unit evaluation form is included in the teacher guide only, but may be duplicated.

Use of This Publication

Teacher supplements (Color code: White)

This component is included only in the teacher guide. Teacher supplements are optional materials for the teacher to use. They have three purposes: to provide the teacher with higher level materials to stretch the advanced student, with remedial information or practice to assist the less-advanced student, and with state-of-the-art information in which the teacher may not have background or with information that is not readily available in other books. Some teacher supplements may be duplicated for student use and are marked accordingly.

Transparency masters (Color code: White)

Transparencies are included in the teacher guide only and are used to direct the students' attention to the topic of discussion. They may provide illustrations, charts, schematics, or additional information needed to clarify and reinforce objectives included in the unit of instruction.

Information sheet (Color code: Green)

The information sheet provides the content essential for meeting the cognitive (knowledge) objectives of the unit. Teachers will find that the information sheet serves as an excellent guide for presenting background knowledge necessary to develop the skills specified in the unit objective. Students should read the information sheet before the information is discussed in class. Space is provided in margins for students and teachers to add notes that supplement, localize, personalize, or provide information for the teaching of each objective.

Student supplements (Color code: White)

Student supplements are included in the student manual. The information presented in a student supplement may consist of tables, charts, written information, forms, or other information students will need in order to complete one or more of the assignment and/or job sheets. Students are not directly tested over the information presented in a supplement; however, their ability to apply this information may be evaluated in the completion of assignment sheets or job sheets.

Assignment sheets (Color code: Tan)

Assignment sheets provide students with pencil and paper activities that give students the opportunity to make practical application of the knowledge in the information sheet. Criteria are provided to objectively evaluate student performance.

Job sheets (Color code: Blue)

The job sheets provide criteria to objectively evaluate student performance, a list of required equipment and materials, and a step-by-step procedure for performing a psychomotor skill. The teacher should discuss the equipment and materials available in the classroom and/or laboratory and demonstrate the procedure prior to having students practice procedure. When a student is ready to be evaluated, the teacher should follow instructions for evaluating student performance which may be found in the teacher guide.

Job sheets are an important segment of each unit. Job sheets provide potential employers with a picture of the skills being taught during training and the performances that might reasonably be expected from an individual who has had this training.

Disseminating material

Material may be given out a unit or page at a time to keep the material before the student always new. Some teachers ask students to furnish a three-ring binder or folder for the current unit of study. This is convenient for students taking the material home to study. Upon completion, each unit is then placed in a larger binder. Some teachers prefer to store the material by unit in filing cabinets or boxes until needed.

For best results, provide student materials for each student. Student manuals contain objective sheets, information sheets, student supplements, assignment sheets, and job sheets. Students should be allowed to take their materials home at the end of the course.

Academic and Workplace Skills
(Classifications and Definitions)

Skill Groups	Sub Skills	Definitions
Learning Skills	Learning to learn	Developing ability to apply knowledge to other situations; knowing how to learn.
Foundation Skills	Reading	Comprehending written information and analyzing, summarizing, and applying what has been read to a specific task.
	Writing	Communicating a thought, idea or fact in written form in a clear, concise manner.
	Math	Applying computation skills such as reasoning, estimation, and problem solving as they are actually used on the job.
	Science	Applying knowledge learned through study or practice that is based on scientific principles as they relate to specific tasks.
Communication Skills	Listening	Listening for content, conversation, long-term contexts, emotional meaning, and directions.
	Oral communication	Communicating a thought, idea, or fact in spoken form in a clear, concise manner.
Adaptability Skills	Creative thinking	Using imagination to create something new—i.e. an idea, invention, work of art.
	Problem solving (critical thinking)	Recognizing and defining problems, inventing, and implementing solutions, and tracking and evaluating results.
Personal Management Skills	Self-esteem	Developing self-confidence and creating a positive self-image.
	Motivation/goal setting	Setting and meeting defined goals and objectives.
	Personal and career development	Emphasizing self-direction by establishing and implementing a plan.
Group Effectiveness Skills	Interpersonal relations	Developing ability to maintain positive relations with others.
	Negotiation	Resolving conflict between two or more individuals.
	Teamwork	Working together in a group to reach a common goal.
Influence Skills	Organizational effectiveness	Adapting to the organization's goals, values, culture, and traditional modes of operation.
	Leadership	Directing/influencing group in performance of a specific task; accepting responsibility for others.

Impact of Technology on the Family

Competency Profile

Name: ______________________________

Directions: Evaluate the student using the rating scale below. Write the appropriate number to indicate the degree of competency achieved. The descriptions associated with each of the numbers focused on a level of student performance for each of the tasks listed. The written test scoreline is provided for optional teacher use. It may not be applicable in all cases.

Option A

Rating scale:
4 - Skilled - Can perform job with no additional training.
3 - Moderately Skilled - Has performed job during training program; limited additional training may be required.
2 - Limited Skill - Has performed job during training program; additional training is required to develop skill.
1 - Unskilled - Is familiar with process, but is unable to perform job.
0 - No Exposure - No information or practice provided during training program, complete training required.
NA - Non-applicable.

Option B

Yes - Can perform with no additional training
No - Is unable to perform satisfactorily

Unit 1: Orientation

______1. Analyze the impact of technology on your life.
______2. Determine technology needed to solve given problems.
______3. Compare computations with and without the use of technology.
______4. ______________________________

______Written Test Score

Unit 2: Family Living

______1. Evaluate the mobility of your extended family.
______2. Evaluate the costs of new technological devices for the family.
______3. Evaluate the role of technology in given family case studies.
______4. Predict how families, work, and school will change in the future.
______5. ______________________________

______Written Test Score

Unit 3: Child Development

______1. Identify positive and negative impacts of technology on children and their families based on actual legal case studies.
______2. Evaluate technology being used by a child.
______3. Predict how technology will change child development.
______4. ______________________________

______Written Test Score

Unit 4: Individual and Family Health

______1. Evaluate given situations about concerns with organ transplants.
______2. Evaluate given situations about concerns with medical life support.
______3. ____

______Written Test Score

Unit 5: Food and Nutrition

______1. Identify food additives and their uses
______2. Evaluate given scenarios about how technology has changed the future related to food and nutrition.
______3. ____

______Written Test Score

Unit 6: Consumer Education

______1. Evaluate features of new products.
______2. Identify recycling efforts in your community.
______3. Research origins of consumer products.
______4. Design a product or service for the future.
______5. ____

______Written Test Score

Unit 7: Housing and Home Management

______1. Identify technology products in your home.
______2. Identify sources of indoor air pollution in your home, and summarize improvements needed.
______3. Evaluate a housing and home management issue.
______4. Design a product that could be used in the home of the future.
______5. ____

______Written Test Score

Unit 8: Clothing and Textiles

______1. Design clothing for a specialized market.
______2. Evaluate given scenarios about how technology has changed the future related to clothing and textiles.
______3. ____

______Written Test Score

COMMENTS:

Evaluator: Date:

• Permission to duplicate this profile is granted.

Impact of Technology on the Family

Instructional/Task Analysis

Related Information: What the Student Should Know

Application: What the Student Should Be Able to Do

Unit 1: Orientation

1. Terms and definitions
2. Definitions of technology and family
3. Reasons for studying the impact of technology on the family
4. Existing conditions in society and their technological responses
5. Examples of new technological advancements affecting families
6. Positive and negative aspects of technology
7. Analyze the impact of technology on your life
8. Determine technology needed to solve given problems
9. Compare computations with and without the use of technology

Unit 2: Family Living

1. Terms and definitions
2. Impact of technology on family relationships
3. Technological devices used by the family
4. Technology that has changed family leisure activities
5. Impact of technology on the workplace
6. Impact of technology on education
7. Positive and negative effects of technology on the family
8. Evaluate the mobility of your extended family
9. Evaluate the costs of new technological devices for the family
10. Evaluate the role of technology in given family case studies
11. Predict how families, work, and school will change in the future

Related Information: What the Student Should Know

Application: What the Student Should Be Able to Do

Unit 3: Child Development

1. Terms and definitions
2. Positive and negative impacts of technology on child development
3. Unborn child technology
4. Examples of technology for infants
5. Examples of technology used during early childhood
6. Ways children with special needs benefit from technology
7. Identify positive and negative impacts of technology on children and their families based on actual legal case studies
8. Evaluate technology being used by a child
9. Predict how technology will change child development

Unit 4: Individual and Family Health

1. Terms and definitions
2. Purposes of technology in health care
3. Positive and negative effects of technology on individual health
4. Technological advancements in health care
5. Potential health hazards in the workplace created by technology
6. Technological health advancements for the special needs population
7. Ways technology has helped to improve an individual's wellness program
8. Current ethical issues related to technological advancements in health care
9. Evaluate given situations about concerns with organ transplants
10. Evaluate given situations about concerns with medical life support

Related Information: What the Student Should Know

Application: What the Student Should Be Able to Do

Unit 5: Food and Nutrition

1. Terms and definitions
2. New food products resulting from technology advancements
3. Food packaging technologies
4. Technologies and their applications for food and nutrition
5. Food additives
6. Technological changes in large and small kitchen appliances
7. Ways that food and nutrition technology helps individuals with special needs
8. Future trends and changes that will influence the food and nutrition industry
9. Identify food additives and their uses
10. Evaluate given scenarios about how technology has changed the future related to food and nutrition

Unit 6: Consumer Education

1. Terms and definitions
2. Ways technology affects consumer products
3. How technology has increased and decreased the cost of consumer products
4. Examples of obsolete consumer products
5. Technology devices or services for consumer shopping
6. Ways technology has impacted on consumer finances
7. Possible technology solutions to environmental problems
8. Impact of technology on the U.S. and world economy
9. Evaluate features of new products
10. Identify recycling efforts in your community
11. Research origins of consumer products
12. Design a product or service for the future

Related Information: What the Student Should Know

Application: What the Student Should Be Able to Do

Unit 7: Housing and Home Management

1. Terms and definitions
2. Goals of technology in housing and home management
3. New materials and technologies used in housing construction
4. Energy-efficient technological products for housing
5. Technological innovations in home appliances and equipment
6. Alternative energies used in housing
7. Automated (SMART) housing
8. Examples of technology used for home security
9. Adaptable housing for special populations
10. Health hazards from technology and ways to improve the home environment
11. Identify technology products in your home
12. Identify sources of indoor air pollution in your home, and summarize improvements needed
13. Evaluate a housing and home management issue
14. Design a product that could be used in the home of the future

Unit 8: Clothing and Textiles

1. Terms and definitions
2. Technological advancements in clothing and textiles that have impacted on different areas of the industrial world
3. Technological improvements in fabrics and clothing
4. Uses of the computer in clothing and textiles
5. Clothing and textile equipment for home or school
6. Future trends in clothing and textiles
7. Design clothing for a specialized market
8. Evaluate given scenarios about how technology has changed the future related to clothing and textiles

Related Academic and Workplace Skills
For *Impact of Technology on the Family*

Task	Skill Group	Sub Skill	Description
Unit 1: Orientation			
Analyze the impact of technology on your life. (A.S. 1)	Foundation Skills	Writing	Writes logical and understandable sentences; organizes sentences into paragraphs
	Adaptability Skills	Creative Thinking	Uses imagination to determine how future would change based on given situation
		Problem Solving	Demonstrate logical reasoning in predicting the future; analyzes situation to determine positive and negative impacts
Determine technology needed to solve given problems. (A.S. 2)	Foundation Skills	Reading	Comprehends written information for main ideas; draws conclusion from what is read
		Writing	Writes logical and understandable sentences; organizes sentences into paragraphs
	Adaptability Skills	Problem Solving	Recognizes problems and gives possible solutions
Compare computations with and without the use of technology. (A.S. 3)	Foundation Skills	Math	Solves math problems including addition, subtraction, multiplication, division, percentages, and square roots; uses calculator to solve math problems
	Adaptability Skills	Problem Solving	Compares two methods and draws conclusion about better method
Unit 2: Family Living			
Evaluate the mobility of your extended family. (A.S. 1)	Foundation Skills	Writing	Writes logical and understandable sentences; presents conclusions in a clear and understandable form
	Adaptability Skills	Problem Solving	Recognizes problems and gives solutions; analyzes situation to determine positive and negative impacts

Task	Skill Group	Sub Skill	Description
Evaluate the costs of new technological devices for the family. (A.S. 2)	Foundation Skills	Reading	Uses written resources to obtain factual information (prices)
		Writing	Presents opinion in written form in a clear, concise manner
	Adaptability Skills	Problem Solving	Demonstrates logical reasoning in reaching a conclusion
Evaluate the role of technology in given family case studies. (A.S. 3)	Foundation Skills	Reading	Comprehends written information for main ideas
		Writing	Presents opinion in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Identifies new ways to deal with existing problems; forms opinion
		Problem Solving	Demonstrates logical reasoning in reaching a conclusion
Predict how families, work, and school will change in the future. (A.S. 4)	Foundation Skills	Writing	Presents opinion in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Uses imagination to predict future changes
		Problem Solving	Analyzes situations to determine positive and negative impacts

Unit 3: Child Development

Task	Skill Group	Sub Skill	Description
Identify positive and negative impacts of technology on children and their families based on actual legal case studies. (A.S. 1)	Foundation Skills	Reading	Comprehends written information for main ideas
		Writing	Presents conclusions in a clear and understandable manner
	Adaptability Skills	Problem Solving	Analyzes situations to determine positive and negative impacts; draws conclusions
Evaluate technology being used by a child. (A.S. 2)	Foundation Skills	Writing	Records data through observation; presents opinion in written form in a clear, concise manner
	Communication Skills	Oral Communication	Asks questions to obtain information
		Listening	Listens for content, emotional meaning, and long-term contexts

Task	Skill Group	Sub Skill	Description
	Adaptability Skills	Problem Solving	Analyzes situation to determine positive and negative impacts; draws conclusions
	Group Effectiveness Skills	Interpersonal Relations	Applies human relations skills to real-life situation
Predict how technology will change child development. (A.S. 3)	Foundation Skills	Writing	Presents opinion in written form in a clear, concise manner; organizes sentences into paragraphs
	Adaptability Skills	Creative Thinking	Uses imagination to predict future changes

Unit 4: Individual and Family Health

Task	Skill Group	Sub Skill	Description
Evaluate given situations about concerns with organ transplants. (A.S. 1)	Foundation Skills	Reading	Comprehends written information for main ideas; draws conclusions from what is read
		Writing	Presents conclusions and opinions in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Identifies new ways to deal with existing problems; forms opinions
		Problem Solving	Demonstrates logical reasoning in reaching a conclusion
Evaluate given situations about concerns with medical life support. (A.S. 2)	Foundation Skills	Reading	Comprehends written information for main ideas; draws conclusions from what is read
		Writing	Presents conclusions and opinions in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Forms opinions
		Problem Solving	Demonstrates logical reasoning in reaching a conclusion

Unit 5: Food and Nutrition

Task	Skill Group	Sub Skill	Description
Identify food additives and their uses. (A.S. 1)	Foundation Skills	Reading	Identifies technical words (food additives); applies information from information sheet about uses
Evaluate given scenarios about how technology has changed the future related to food and nutrition. (A.S. 2)	Foundation Skills	Reading	Comprehends written information for main ideas
		Writing	Presents opinion in written form in a clear, concise manner

Task	Skill Group	Sub Skill	Description
	Adaptability Skills	Creative Thinking	Uses imagination to predict future changes
		Problem Solving	Analyzes situations to determine positive and negative impacts; draws conclusions
Unit 6: Consumer Education			
Evaluate features of new products. (A.S. 1)	Foundation Skills	Writing	Presents answers and opinions in a clear and understandable form
	Adaptability Skills	Problem Solving	Identifies products, evaluates features, and draws conclusions
Identify recycling efforts in your community. (A.S. 2)	Foundation Skills	Reading	Uses written resources (telephone directories) to obtain information
		Writing	Records data; adapts notes to a proper form; presents answers in a clear and understandable form
		Science	Analyzes environmental issue of recycling
	Communication Skills	Oral Communication	Asks questions to obtain and clarify information
		Listening	Listens for content
Research origins of consumer products. (A.S. 3)	Foundation Skills	Reading	Uses written resources to obtain factual information; determines what information is needed
		Writing	Takes notes from various sources; adapts notes to a proper form
Design a product or service for the future. (A.S. 4)	Foundation Skills	Writing	Presents original design in a clear and understandable form; writes logical and understandable sentences; organizes sentences into paragraphs
	Adaptability Skills	Creative Thinking	Creates new design for the future
Unit 7: Housing and Home Management			
Identify technology products in your home. (A.S. 1)	Foundation Skills	Writing	Records data through observation; organizes data into given classifications

Task	Skill Group	Sub Skill	Description
Identify sources of indoor air pollution in your home, and summarize improvements needed. (A.S. 2)	Foundation Skills	Reading	Uses written resources to obtain factual information; determines what information is needed
		Writing	Takes notes from various sources; adapts notes to a proper form; completes form accurately; writes logical and understandable sentences; organizes sentences into paragraphs
		Science	Analyzes environmental issue of pollution
	Adaptability Skills	Problem Solving	Draws conclusions from observations and research; gives possible solutions
Evaluate a housing and home management issue. (A.S. 3)	Foundation Skills	Reading	Uses written resources to obtain factual information; determines what information is needed
		Writing	Takes notes from various sources; presents opinion in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Forms opinions
		Problem Solving	Demonstrates logical reasoning in reaching a conclusion; analyzes situation to determine positive and negative impacts
Design a product that could be used in the home of the future. (A.S. 4)	Foundation Skills	Writing	Presents original design in a clear and understandable form; writes logical and understandable sentences; organizes sentences into paragraphs
	Adaptability Skills	Creative Thinking	Creates new design for the future

Unit 8: Clothing and Textiles

Task	Skill Group	Sub Skill	Description
Design clothing for a specialized market. (A.S. 1)	Foundation Skills	Writing	Presents original design in a clear and understandable form; writes logical and understandable sentences; organizes sentences into paragraphs
	Adaptability Skills	Creative Thinking	Creates new design for the future
		Problem Solving	Recognizes problems of specialized market and gives possible solutions

Task	Skill Group	Sub Skill	Description
Evaluate given scenarios about how technology has changed the future related to clothing and textiles. (A.S. 2)	Foundation Skills	Reading	Comprehends written information for main ideas
		Writing	Presents opinion in written form in a clear, concise manner
	Adaptability Skills	Creative Thinking	Uses imagination to predict future changes
		Problem Solving	Analyzes situations to determine positive and negative impacts; draws conclusions

Impact of Technology on the Family

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Orientation
Unit 1

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss the impact of technology on the family. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to technology and the family with the correct definitions.
2. Define technology and family.
3. State reasons for studying the impact of technology on the family.
4. Match existing conditions in society with their technological responses.
5. Give examples of new technological advancements affecting families.
6. Distinguish between the positive and negative aspects of technology.
7. Analyze the impact of technology on your life. (Assignment Sheet 1)
8. Determine technology needed to solve given problems. (Assignment Sheet 2)
9. Compare computations with and without the use of technology. (Assignment Sheet 3)

Orientation
Unit 1

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives.
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Give written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. To introduce this unit, have on display examples of new technology available for home use. Ask students or a local dealer of home appliances or entertainment systems to loan equipment and speak to the class about new items on the market. Firsthand experience with new products can increase **tactile learning**.

2. To develop interest use a bulletin board headed FYI (for your information). Post pictures and articles found in newspapers and magazines depicting technology. Include future predictions and illustrations.

3. Ask your school media specialist to subscribe to *Omni* or *The Futurist* magazines, or ask students to bring in issues from home. Search for related articles.

4. Have students collect current newspaper articles to share with class. Many local and national newspapers have lifestyle sections which feature new innovations and technology.

   Note: Current periodic literature suggested in 2-4 can help you and your students stay up-to-date about technology. Explain how **reading** is vital to lifelong learning and adaptation to new innovations.

5. Contact your local homebuilders association or local utility companies, and inquire about resources in your area, especially ways to save energy.

6. Many area vocational-technical schools have information that would be of interest to students in reference to "artificial intelligence" or smart cars and how mechanics are trained to service and maintain these new vehicles.

7. Discuss the different cultures and people in our global environment and how these cultures have affected technology. Have students identify the cultural origin of technology devices. Discussions can reinforce **creative thinking, critical thinking skills**, and **communication skills**.

8. Inquire at your local telephone company about the new services available. Invite a representative to visit with class or provide publications for classroom use about new technology used in communication. Cellular phone and cable television companies are other options. Ask them to explain fiberoptics and mobile communication. This can reinforce students' **communication skills**.

Suggested Activities

9. Contact local utility companies for information about new technologies offered to their customers.

10. Explore in class discussion the concept of **change**. Ask questions such as the following: Why do things change? Why should things change? or why not? Are we challenged or afraid of changes caused by technology? What if time stood still, and nothing new ever developed? This discussion can reinforce **communication skills** and **critical thinking skills**.

11. Additional suggestion for Assignment Sheet 1, part B—Conduct class discussion and divide into groups to answer the questions orally. Have students share answers with class.

12. Additional suggestion for Assignment Sheet 2—Read *The Futurist*, Jan.-Feb. 1990, article "1890—Where America was a Century Ago," p. 22. Compare the 1890's to the 1990's in the following areas: transportation, medical care, food preservation, education, parenting, and communication. Students can create a poster comparing then and now, using drawings, cut-outs, etc. to illustrate the differences.

13. Additional suggestion for Assignment Sheet 3—Encourage students to think how technology has made performing tasks in their home easier or more efficient. Compare accuracy, productivity, and speed.

    Examples: Hand sewing vs. machine sewing
    Mercury thermometers vs. digital thermometers
    Line drying vs. machine drying
    Shredding food by hand vs. food processing

    Encourage students to list as many as possible, competing in small groups for the most examples.

14. Give students a "technological literacy test." Write this test so it focuses on home economics and new technological developments and devices. This can serve as a pretest and can increase students' interest in technology and how it impacts on home economics.

Resources Used in Developing This Unit

1. Fales, James, et. al. *Technology: Today and Tomorrow*. Missions Hills, CA: Glencoe Publishing Co., 1988.

2. Center, John. "Where America Was a Century Ago" *The Futurist*, Jan.-Feb., 1990. p. 22.

Suggested Activities

3. Yorke, Margaret. "Breadth and Balance" *The Times Educational Supplement*, March 18, 1988, p. 29.

4. Gordon, Mitchell. "High-Tech Loneliness: How Our Inventions Keep Us Apart." *The Futurist*, July-August, 1990, p. 60.

5. United Way Strategic Institute. "Nine Forces Reshaping America." *The Futurist*, July-August, 1990, p. 9.

6. Bureau of National Affairs, *The Future of Work and Family*, Special Report #34, 1990.

7. Willoughby, Kelvin W. *Technology Choice*. Westview Press, 1990.

8. Brennan, Richard D. *Levitating Trains and Kamikaze Genes: Technological Literacy for the 1990's*. New York: John Wiley & Sons, 1990.

9. Cetron, Marvin and Owen Davies. *American Renaissance: Our Life at the Turn of the 21st Century*. St. Martin's Press, 1989.

10. Cappo, Joe. *Future Scope: Success Strategies for the 1990s & Beyond*. Longman Financial Services Publishing, 1990.

11. Kiplinger, Austin H. and Knight A. Kiplinger. *America in the Global '90s: The Shape of the Future—How You Can Profit From It*. Kiplinger Books, 1989.

Suggested Supplemental Resources — Videotapes

1. *Living with Technology*, 19 min., 1983. Illustrates how our lives are touched by technology.

2. *Decisions, Decisions, Decisions*, 20 min., 1983. Shows the steps in decision making, both by humans and machines.

3. *The Technology Spiral*, 20 min., 1986. Gives a historical timeline of technology.

4. *Risk, Safety, and Technology*, 19 min., 1988. Discusses risks created and solved by technology.

These four videotapes are part of the *You, Me, and Technology* series available from:

Agency for Instructional Technology (AIT)
Box A
Bloomington, IN 47402
800-457-4509 or 812-339-2203

Orientation
Unit 1

Answers to Assignment Sheets

Assignment Sheet 1

Part A—The students' responses will vary according to individual homes.

Part B—The students should give creative thought to how different life would be with logical and appropriate responses.

Assignment Sheet 2

The students' answers will vary but may include:

Case A: Use electronic garage door opener, automated timers for interior and exterior lighting, security system, and timers for TV or stereo.

Case B: Use wrist watch with alarm for better time management, computer assistance for studying, mini tape recorder to take to class to record lectures, and time management seminar, book, or tapes.

Case C: Install improved air cleaners or filters in the home. Make an appointment for Baby Lee to visit pediatrician or allergy specialists. Install intercom and/or a specialized respiratory monitor.

Assignment Sheet 3

Part A

Addition	11,557	9,526	3,839
Subtraction	84	445	85
Multiplication	65,661	39,150	54,282
Division	2241.67	1671.86	1076.92
Percentages	50	103.5	375
Square roots	9	12.25	7.75

Answers to Assignment Sheets

Part B

Addition	3,839	11,557	9,526
Subtraction	85	84	445
Multiplication	54,282	65,661	39,150
Division	1076.92	2241.67	1671.86
Percentages	103.5	375	50
Square roots	7.75	12.25	9

Part C

Individual responses should be logical and appropriate. Most will conclude technology does increase speed and accuracy.

Orientation
Unit 1

Answers to Written Test

1. a. 1 e. 10
   b. 7 f. 3
   c. 8 g. 2
   d. 5 h. 4

2. a. Technology is the application of knowledge, and the use of resources to meet human needs, to solve problems, and to extend human capabilities.
   b. Family is one or more individuals joined by blood, marriage, adoption, or other bonds which may share some support systems.

3. Any two of the following:

   a. Some will pursue technologically oriented careers, but all individuals will be consumers and members of families.
   b. Lives can be revolutionized by the application of technology, making life more enjoyable and easier.
   c. Options for the future are linked to technological advancements.
   d. Lifelong learning will be needed in order to live effectively with technology.

4. a. 2
   b. 4
   c. 5
   d. 6
   e. 1

5. Answers are not limited to, but may include:

   a. Video entertainment and games, exercise equipment, travel reservations, improved transportation, increased use of computers, possibilities for flexible hours
   b. Computer games, infant monitors, aseptic packaging
   c. Focus on wellness and preventive health care, laser surgery, birth control
   d. Genetic engineering, hydroponic farming, convenience foods, synthetic food substitutes
   e. Cable shopping, scanners, computer programs for home financial use
   f. Computer-controlled automated houses, energy efficiency
   g. Computer-assisted manufacturing, synthetic fibers and finishes for easy care, improved laundry products

6. a. P f. N
   b. N g. N
   c. N h. P
   d. P i. P
   e. N j. N

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Orientation
Unit 1

Written Test

Name ______________________________ Score ______________

1. Match the terms on the right with their correct definitions by writing the corresponding numbers on the blanks provided.

______a. The study of the interaction of air and moving objects

______b. The use of thin, transparent fibers of glass or plastic to transmit light; digital information can be sent through these fibers using impulses of light on or off

______c. The movement of pieces of genetic information from one organism to another

______d. Data in the form of numerical digits

______e. A device that generates a concentrated beam of light that travels in a very narrow straight path

______f. Capable of decomposing in the environment as a result of biological action

______g. The capability of machines (primarily computers) to imitate intelligent human behavior

______h. A social phenomenon where families stay close to the home and interact very little with their outside surroundings

1. Aerodynamics
2. Artificial intelligence
3. Biodegradable
4. Cocooning
5. Digital information
6. Facsimile machine
7. Fiberoptics
8. Genetic engineering
9. Globalization
10. Laser

2. Define technology and family.

a. Technology — ____

____

____

Written Test

b. Family — ______________________________

____

____

3. State two reasons for studying the impact of technology on the family.

a. ______________________________

____

____

b. ______________________________

____

____

4. Match the existing conditions in society below with their technological responses.

_____a. Individual, home, and societal roles have been redefined. Postponement of marriage and age of childbearing has increased.

_____b. We have become an information-based service economy.

_____c. Globalization has increased exports and imports of products. Industries face growing competition from other countries.

1. Research will seek new ways to ease the effects of aging.
2. Many functions once provided by the home are offered as commercial services. Also more things we used to do away from home we can now do at home.
3. The advances in technology will enable products to be customized, reinforcing the distinctive identities of individuals.
4. The computer has revolutionized the amount of information available and has made this information easier and faster to obtain.

Written Test

______d. Health issues focus on the quality of life of individuals and concerns for the future of the environment.

______e. The United States population growth is slowing, and the median age is older.

5. The U.S. society is becoming more aware of other cultures through marketing, travel, international organizations, and the media.

6. Americans are living longer and on the average health is improving. Technology seeks to address environmental issues.

5. Give at least one example of a new technological advancement in each of the areas listed below:

a. Family living ____

____

b. Child development ____

____

c. Individual and family health ______________________________

____

d. Foods and nutrition _______________________________________

____

e. Consumer education _______________________________________

____

f. Housing and home management _______________________________

____

g. Clothing and textiles _____________________________________

____

Written Test

6. Distinguish between the positive and negative aspects of technology by writing P or N on the blank before each statement.

_______a. New products are produced more efficiently.

_______b. Many people feel a loss of privacy and less secure.

_______c. Many new products have increased costs.

_______d. Information can be accessed much faster.

_______e. Families are cocooning which leads to less interaction.

_______f. More information and training will be needed to use each new device.

_______g. Environmental problems from excess wastes that are not biodegradable are increasing.

_______h. Communication is easier and more mobile.

_______i. Transportation continues to improve and be more energy-efficient.

_______j. Newer products will need to be replaced rather than repaired.

***Permission to duplicate this test is granted.**

Orientation
Unit 1

Unit Evaluation Form

Student Name ______________________ Unit Rating ________

Assignment Sheet 1—Analyze the Impact of Technology on Your Life Rating ______

Comments: ______________________

____

Assignment Sheet 2—Determine Technology Needed to Solve Given Problems Rating ______

Comments: ______________________

____

Assignment Sheet 3—Compare Computations With and Without the Use of Technology Rating ______

Comments: ______________________

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ______________________

____

Teacher Signature ______________________ Date ________

Student Signature ______________________ Date ________

***Permission to duplicate this form is granted.**

Orientation
Unit 1

Information Sheet

1. **Terms and definitions**

   a. **Aerodynamics** — The study of the interaction of air and moving objects

   b. **Artificial intelligence** — The capability of machines (primarily computers) to imitate intelligent human behavior

   c. **Biodegradable** — Capable of decomposing in the environment as a result of biological action

      Note: Products vary in the amount of time they require to degrade, from a few weeks to thousands of years.

   d. **Cocooning** — A social phenomenon where families stay close to the home and interact very little with their outside surroundings

   e. **Digital information** — Data in the form of numerical digits (primarily the binary digits of 0 and 1)

   f. **Facsimile (fax) machine** — Device for transmitting graphic material (words and pictures) by telephone wire; material is then reproduced as digital information at the receiving site

   g. **Fiberoptics** — The use of thin, transparent fibers of glass or plastic to transmit light; digital information can be sent through these fibers using impulses of light on or off

   h. **Genetic engineering** — The movement of pieces of genetic information from one organism to another

      Note: Genetic engineering allows scientists to alter the characteristics of many plants and animals more quickly and efficiently than through traditional breeding.

   i. **Globalization** — To make worldwide in scope or application

   j. **Laser** — A device that generates a concentrated beam of light that travels in a very narrow straight path

Information Sheet

2. Definitions of technology and family

a. Technology — The application of knowledge and the use of resources to meet human needs, to solve problems, and to extend human capabilities

b. Family — One or more individuals joined by blood, marriage, adoption, or other bonds which may share some support systems

Note: Support systems may be financial, physical, emotional, or social.

3. Reasons for studying the impact of technology on the family

a. Some will pursue technologically oriented careers, but all individuals will be consumers and members of families.

b. Lives can be revolutionized by the application of technology, making life more enjoyable and easier.

c. Options for the future are linked to technological advancements.

d. Lifelong learning will be needed in order to live effectively with technology.

4. Existing conditions in society and their technological responses

Existing Conditions in Society	Technological Responses
a. The United States population growth is slowing, while the median age is growing older. Note: The average age in 1990 was 36; by the year 2000 it will be 39.	Research will seek new ways to ease the effects of aging. More products are being developed for older Americans.
b. Individual, home, and societal roles have been redefined. Postponement of marriage and age of childbearing has increased. We are more diverse, having more single person households, single-parent homes, and more two income families with fewer children.	Many functions once provided by the home are offered as commercial services (meal preparation and child care). Also more things we used to do away from home we can now do at home (movies, shopping). There is an increase in self-help with individuals assuming more responsibility in their own maintenance.

Information Sheet

Existing Conditions in Society	Technological Responses
c. We have become a "mosaic" society rather than a "melting pot." Distinct segments of the population are less expected to change and give up their cultural heritage.	The advances in technology will enable products to be customized, reinforcing the distinctive identities of individuals.
d. We have become an information-based service economy instead of the previous manufacturing-based product economy.	The computer has revolutionized the amount of information available and has made this information easier and faster to obtain.
e. Globalization has increased exports and imports of products. U.S. industries face growing competition from other countries. U.S. prosperity will increasingly be dependent on trade with other nations and on our ability to compete.	The U.S. society is becoming more aware of other cultures through marketing, travel, international organizations, and the media. Companies are using new ideas from other countries. Technology literacy is more important as companies compete globally.
f. Health issues focus on the quality of life of individuals and concerns for the future of the environment.	Americans are living longer, and on the average, health is improving. Technology seeks to address environmental issues.

5. **Examples of technological advancements affecting families**

    a. Family living

        (1) Leisure time activities: Video entertainment and games, new exercise equipment, and travel reservations

        (2) Work and school activities: Improved transportation to and from work and school, increased use of computers and new technology, and possibilities for flexible hours and year-round schools with rotating vacations

    b. Child development

        (1) Use of computerized games and toys by children

        (2) Availability of infant monitors for home use

        (3) Use of aseptic packaging for smaller appetites

Information Sheet

c. Individual and family health

  (1) Increased focus on wellness programs and preventive health care

  (2) Advances in medical technology and more effective procedures such as laser surgery and arthroscopic surgery

  (3) Birth control that is simpler, more effective, and safer

d. Foods and nutrition

  (1) Genetic engineering of food sources to improve the quality and quantity of food choices

  (2) Hydroponic farming for food production

  (3) Convenience foods and synthetic food substitutes

e. Consumer education

  (1) Shopping made available at home through cable television home shopping networks

  (2) Personal computers with modems that can access a variety of goods and services including information services, home banking, and electronic mail

  (3) Electronic scanners to speed checkout and to help in inventory control

  (4) Personal computer programs to assist household members with budgeting, record keeping, and tax preparation

f. Housing and home management

  (1) Computer-controlled automated houses to provide security and the ability to control household activities electronically by voice, touch, motion, time, or situation

  (2) Energy-efficient appliances to better utilize resources

g. Clothing and textiles

  (1) Computer-assisted manufacturing to save time and resources

  (2) Revolutionized synthetic fibers and finishes to provide consumers with improved performance and care of textile products

  (3) Improved laundry care products that are more environmentally safe

Information Sheet

6. Positive and negative aspects of technology and its implications for families

a. Positive aspects of technology

(1) There is greater variety of services available for home use.

Examples: Food delivery, electronic entertainment, shopping networks, electronic mail

(2) New products are produced more efficiently.

Examples: Computer-aided design, computer integrated manufacturing, robotics

(3) Information can be accessed much faster.

Examples: Facsimile machines, pagers, educational satellite programs, personal computers with subscription utilities

(4) Communication is easier and more mobile.

Examples: Portable phones, cellular car phones, pagers, personal computers, facsimile machines

(5) Transportation continues to improve and be more energy-efficient.

Examples: Vehicles are designed with improved aerodynamics.
Aluminum and plastics are replacing heavier steel parts.
Artificial intelligence programs produce "brainy cars" that almost drive themselves.
More vehicles use alternative energies.

(6) Individuals with physical disabilities have increased mobility and improved performance of tasks.

Examples: Electric wheelchairs, communication through electronic devices, computers specially designed to assist with various disabilities

b. Negative aspects of technology

(1) "Cocooning" leads to decreased physical activity and less interaction with friends, neighbors, and extended family members.

(2) More training and information will be needed to use or service the many new devices.

(3) Newer products will need to be replaced rather than repaired resulting in increased costs and more discarded items.

Information Sheet

(4) Environmental problems from excess wastes that are not biodegradable are increasing.

(5) New technology that was designed to assist the consumer also allows others to track your purchases and know about your personal life. Many people feel a loss of privacy and less secure knowing that others can also access information about them.

Examples: Computerized bank accounts, computerized medical records, home shopping using credit card numbers

(6) Many products and procedures used by technology can cause health problems for family members.

Examples: Respiratory problems from smog, joint injuries from repetitive motion while operating machinery, cancer from water contaminated by toxic waste

Orientation
Unit 1

Assignment Sheet 1—Analyze the Impact of Technology on Your Life

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Checklist is complete	______
Analysis is written clearly and logically	______

Introduction: Technology devices are used every day by all of us for work and for fun. We depend on technology to be there when we need it. The purpose of this assignment is to see how technology impacts on your life.

Part A: Using the checklist below, indicate the technological devices you have for personal or family use in the home. After completing Part A, continue with Part B.

______ Calculator
______ Car phone
______ Compact disc (CD) player
______ Digital clock or watch
______ Dishwasher
______ Electric hair curlers, curling iron
______ Electric hair dryer
______ Electric razor
______ Electronic garage door opener
______ Electronic security system
______ Facsimile (fax) machine
______ Microwave oven
______ Personal computer
______ Remote control devices
______ Shower massage
______ Stationary bicycle
______ Stereo with tape recorder/player
______ Television
______ Telephone answering machine
______ Timer devices
______ Trash compactor
______ Treadmill exerciser
______ Ultrasonic contact lens cleaner
______ Video camera (camcorder)
______ Video cassette recorder (VCR)
______ Video games
______ Washer and dryer
______ Water conservation devices (low flow toilet, faucet, shower)

Assignment Sheet 1

Include additional examples not listed previously on the lines below.

______________________ ______________________

______________________ ______________________

______________________ ______________________

Part B: Now that you have considered some of the modern devices that technology has produced, imagine that all have disappeared or are no longer functional. How would your daily routine and activities change? ______________________

____

____

____

____

How would you accomplish routine tasks? ______________________

____

____

____

____

Would your lifestyle change for better or worse? __________ Why? __________

____

____

____

____

Which device would you miss the most? ______________________

Why? ______________________________________

____

Orientation
Unit 1

Assignment Sheet 2—Determine Technology Needed to Solve Given Problems

Name ________________________________ Overall Rating __________

Evaluation criteria	**Rating**
Answers are appropriate for problems	______
Descriptions are written clearly and logically	______

Introduction: The purpose of this assignment is to see that one of the goals of technology is to solve problems. However, humans must make decisions about what technology is appropriate in each situation.

Directions: Determine how technology is needed to solve the following problems based upon your own awareness of technology. Read each of the following case studies and in writing determine how technology can be used to help solve the individual or family problem.

Case A: Mr. and Mrs. Gregory, an elderly couple, return home to a dark house after an evening of playing bingo at the senior citizen center. The potential of burglary exists within their neighborhood. How can technology help this couple? ________________

____

____

____

____

____

Case B: Andrea, a sixteen-year-old high school student, is having difficulty finding enough time for study and frequently "forgets" to complete her homework. How can technology help her with this problem? ________________________________

____

____

____

____

Assignment Sheet 2

Case C: David and Maria are the young parents of baby Lee. Lee has breathing problems including asthma and an allergy to mold spores. David and Maria are fearful their baby will stop breathing. How can technology help solve their problem? ____________________

____

____

____

____

____

Orientation
Unit 1

Assignment Sheet 3—Compare Computations With and Without the Use of Technology

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Answers are given	______
Times and accuracies are recorded	______
Conclusions are appropriate	______

Introduction: Technology can help us perform both simple and complicated tasks. The purpose of this assignment is to see how technology can make us faster and more accurate in our daily jobs.

Directions: Solve the following math problems while your partner, using a stop watch, times your computations. Part A is to be completed without the use of a calculator. Record your time. Then with the use of the calculator, solve the problems in Part B. Again have your partner time your computations with the stop watch, and record your new time.

Now determine how accurate you were both ways. Use the answer sheet included and record the number of answers correct. Then proceed to Part C and draw your conclusions about this activity.

Part A—Without Calculator

Addition	6341 +5216	8406 +1120	1952 +1887
Subtraction	369 −285	1432 − 987	1078 − 993

Assignment Sheet 3

Multiplication $\begin{array}{r}129\\ \times 509\\ \hline\end{array}$ $\begin{array}{r}522\\ \times\ 75\\ \hline\end{array}$ $\begin{array}{r}498\\ \times 109\\ \hline\end{array}$

Division $12\overline{)\,26{,}900}$ $36\overline{)\,60{,}187}$ $48\overline{)\,51{,}692}$

Note: Round to hundredths.

Percentages 25% of 200 = ______ 23% of 450 = ______ 75% of 500 = ______

Square Roots $\sqrt{81}$ = ______ $\sqrt{150}$ = ______ $\sqrt{60}$ = ______

Time: ____________ Minutes ____________ Seconds

Answers correct: ______ out of 18.

Assignment Sheet 3

Part B—With Calculator

Addition	$\begin{array}{r}1952\\ \underline{+1887}\end{array}$	$\begin{array}{r}6341\\ \underline{+5216}\end{array}$	$\begin{array}{r}8406\\ \underline{+1120}\end{array}$
Subtraction	$\begin{array}{r}1078\\ \underline{-\ 993}\end{array}$	$\begin{array}{r}369\\ \underline{-285}\end{array}$	$\begin{array}{r}1432\\ \underline{-\ 987}\end{array}$
Multiplication	$\begin{array}{r}498\\ \underline{\times 109}\end{array}$	$\begin{array}{r}129\\ \underline{\times 509}\end{array}$	$\begin{array}{r}522\\ \underline{\times\ 75}\end{array}$
Division	51,692 ÷ 48 = ______	26,900 ÷ 12 = ______	60,187 ÷ 36 = ______
Percentages	23% of 450 = ______	75% of 500 = ______	25% of 200 = ______
Square Roots	$\sqrt{60}$ = ______	$\sqrt{150}$ = ______	$\sqrt{81}$ = ______

Time: ____________ Minutes ____________ Seconds

Answers correct: ______ out of 18.

Assignment Sheet 3

Answer Sheet

Part A			
Addition	11,557	9,526	3,839
Subtraction	84	445	85
Multiplication	65,661	39,150	54,282
Division	2241.67	1671.86	1076.92
Percentages	50	103.5	375
Square Roots	9	12.25	7.75
Part B			
Addition	3,839	11,557	9,526
Subtraction	85	84	445
Multiplication	54,282	65,661	39,150
Division	1076.92	2241.67	1671.86
Percentages	103.5	375	50
Square Roots	7.75	12.25	9

Part C: Answer the following questions in the space provided.

1. Which method was faster?
2. Which method was more accurate?
3. Which method did you prefer? Why?

Family Living
Unit 2

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss and evaluate the impact of technology on family living. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to family living with their correct definitions.
2. Discuss the impact of technology on family relationships.
3. Match technological devices used by the family with the correct descriptions.
4. Select true statements concerning technology that has changed family leisure activities.
5. Select true statements concerning the impact of technology on the workplace.
6. Complete statements concerning the impact of technology on education.
7. Distinguish between the positive and negative effects of technology on the family.
8. Evaluate the mobility of your extended family. (Assignment Sheet 1)
9. Evaluate the costs of new technological devices for the family. (Assignment Sheet 2)
10. Evaluate the role of technology in given family case studies. (Assignment Sheet 3)
11. Predict how families, work, and school will change in the future. (Assignment Sheet 4)

Family Living
Unit 2

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives.
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Give written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include an additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Introduce the unit by showing antique home devices such as rug beaters, noodle cutters, or farm implements. Have students guess what each device is. Then discuss the need for the tool at the time. What has replaced the tool or why don't we need it anymore? Discussions such as these help to reinforce **oral communication skills** and **problem solving skills**.

2. Show examples of technological devices used by the family that are outlined in Objective 3 of the Information Sheet, and demonstrate their use if needed. Let students practice operating them. This reinforces **tactile learning skills**.

3. Have students discuss their personal experiences using new technological devices. Which ones do they think are necessary and which ones are unnecessary? This discussion can reinforce **oral communication skills** and **problem solving skills**.

4. Divide the class into two teams to debate the pros and cons of television. Also discuss how televison impacts on family interactions. Students should see that any technology has advantages and disadvantages. You may encourage the class to arrive at a consensus about how much television is "good" for them. Class debates and discussions help students form their opinions and clarify their values. This reinforces **creative thinking,** and **critical thinking skills** and can help them in their **communication skills, personal management skills, group effectiveness skills,** and **influence skills**.

5. Invite a panel of parents, grandparents, retired workers, and former teachers to discuss with the class how family leisure, work, and school activities have changed over the last 25-50 years. Have students write specific questions beforehand that they can ask the panel. This panel discussion can increase understanding between generations and can increase students' **writing foundation skills, oral communication skills,** and **interpersonal relation skills**.

6. Additional suggestion for Assignment Sheet 1—Provide a large world map so students can mark with pins or tacks the locations of all classmates' family members. This will further emphasize the mobility of our modern society.

7. Additional suggestion for Assignment Sheet 2—Provide up-to-date catalogs and price lists so students can determine current prices of technological devices.

8. Additional suggestion for Assignment Sheets 3 and 4—Class discussions would be helpful after students complete these assignments on their own.

Suggested Activities

Resources Used in Developing This Unit

1. Haddad, Amy Marie. *High Tech Home Care.* Rockville, MD: Aspen Pub., 1987.
2. Salisbury, Christine and James Intagliata. *Respite Care.* Baltimore, MD: Paul Brookes, Pub., 1986.
3. Zinn, Maxine and D. Stanley Eitzen. *Diversity in American Families.* New York: Harper Row, 1987.
4. "Work & Family Programs." Washington, DC: Bureau of National Affairs, January 1990.
5. Morf, Martin and Philip Alexander. *The Electronic Cottage.* Knoxville, TN: Office for Research in High Technology Education, 1984.
6. Bergheim, Laura. "Pluggies." *Dissent.* Winter 1990, pp. 36-41.

Suggested Supplemental Resources

1. *Television and Human Behavior.* 26-minute videotape.
2. *Working Parents: Balancing Kids and Careers.* 25-minute videotape.

1 and 2 are available from:

The Learning Seed
330 Telser Road
Lake Zurich, IL 60047
800-634-4941

Family Living
Unit 2

Answers to Assignment Sheets

Assignment Sheet 1—Answers will vary according to students' families.

Assignment Sheet 2—Answers will vary according to devices chosen.

Assignment Sheet 3—Answers will vary. Typical answers may include:

A.
1. Juan could move in with father, father could move in with him, or father could move to nursing home or other relative's home
2. Varies
3. Money, change in lifestyle, little free time, added responsibility
4. A medic alert for Manuel, a pager or cellular phone for Juan or Manuel, or they could rent medical equipment for the home

B.
1. Unplanned pregnancy, planning a career change, no roommate, loneliness, difficulty making ends meet
2. Let her move in, say no, or find solution to basic problem (indicated in 1)
3. Varies
4. Financial, lack of privacy, less free time, added responsibility

C.
1. Camcorder, answering machine, home security system, infant monitor
2. Money for devices, childcare burdens and expenses, less free time, more househould chores
3. Answering machine to handle phone calls, pager for when they're away, picture phone for the child to use

D.
1. Trying to do her job and care for the child
2. Computer allows her to put work on hold, answering machine handles her calls
3. Varies

Assignment Sheet 4—Answers should reflect insight, creativity, and be well-written and fully explained.

Family Living
Unit 2

Answers to Written Test

1. a. 3
   b. 6
   c. 8
   d. 7
   e. 1
   f. 10
   g. 5

2. Discussions should include **one** of the following:

   a. **Increased mobility**

      (1) Families move due to job changes and the specialized careers caused by advanced technology.
      (2) Families have become scattered across the country/world.
      (3) Individuals seek support from friends, neighbors, and co-workers, rather than solely from the family due mainly to long distances.
      (4) Long-distance moves increase family stress.

   b. **Aging society**

      (1) Individuals live longer due to improved medical care and improved nutrition.
      (2) There is a longer "empty nest" stage of the family. Parents have more years to pursue their personal interests such as travel, hobbies, another career, or saving for retirement.
      (3) The elderly often need assistance with household tasks and personal care as their health declines.
      (4) The mobility of families has often left elderly family members alone and lonely in their old age when their needs are greatest.
      (5) Retirement communities and nursing care facilities have experienced rapid growth.

   c. **More working women**

      (1) Single women are heads of households and provide the primary financial support for their family. They must work to provide the necessities.
      (2) Married women also provide financial support for their family, but they may work to provide more of the technological "extras" and to maintain a higher standard of living.
      (3) As more women work outside the home, family responsibilities in caring for children and the home also change.

Answers to Written Test

d. **Changes in communication**

   (1) Family members often spend less time together, so there are fewer opportunities for one-on-one communication.
   (2) Less communication can cause or worsen many family problems.
   (3) Many technological devices can be used to keep family members in touch with each other.

e. **More contraception choices**

   (1) Advances in the technology of contraception allow families to plan the size of their family and the spacing between children.
   (2) This has helped to result in smaller families.

3. a. 6
   b. 5
   c. 2
   d. 12
   e. 4
   f. 1
   g. 8
   h. 9
   i. 10
   j. 11

4. a. T
   b. F
   c. F
   d. T
   e. T

5. a. T
   b. F
   c. F
   d. T
   e. T

6. a. Answers will vary. Possible answers include math and reading drills, taking tests, and designing projects.
   b. Satellites

7. a. P
   b. P
   c. N
   d. P
   e. N
   f. N

Family Living
Unit 2

Written Test

Name ______________________________ Score ______________

1. Match the terms on the right with their correct definitions.

______a. An adjustment made by a business in the beginning and ending times of the work day to better meet the needs of workers

______b. A person's feelings of fulfillment based on personal attitudes toward family, job, and self

______c. People who must care for both their children and their parents

______d. Services provided to families to enable them to take a break from the responsibility of caring for a family member with a disability or illness

______e. Adult children who move back to live with their parents

______f. Working at home using a computer that communicates with the main computers at a business

______g. The movement of families between dwellings and between cities or states

1. Boomerang kids
2. Dual-working family
3. Flex-time
4. Head-of-household
5. Mobility
6. Quality of life
7. Respite care
8. Sandwich generation
9. Single-parent
10. Telecommuting

Written Test

2. Discuss the impact of technology on family relationships for one of the following areas: Increased mobility, aging society, more working women, changes in communication, or more contraception choices. Discuss both how technology has caused this and how it impacts on family relationships.

3. Match the following technological devices used by the family with the correct descriptions.

______a. Record and/or entertain family members with musical or theatrical performances or family events

______b. Help people, especially children, elderly, and disabled, contact police, ambulance, fire department, or neighbor when an emergency occurs

______c. Help perform math functions very quickly and accurately

______d. Operate technological devices from a distance

______e. Promote independent living for people with disabilities

______f. Screen telephone calls and record callers' messages

______g. Notify authorities when a home is entered improperly or illegally; may include the use of alarms or lights

1. Answering machines
2. Calculators
3. Cellular phones
4. Disability devices
5. Emergency notification devices and services
6. Entertainment equipment
7. Exercise equipment
8. Home security systems
9. Kitchen and laundry appliances

Written Test

______h. Used for household chores

______i. Beep when a special radio signal is sent to tell the carrier to contact his/her home or workplace

______j. Store, retrieve, and process large amounts of information

10. Pagers

11. Personal (home) computers

12. Remote controls

4. Select true statements concerning technology that has changed family leisure activities by placing a "T" or "F" next to the true or false statements.

______a. Pay TV/cable TV, video cassette recorders, and remote controls increase television viewing choices.

______b. Answering machines save you a lot of money.

______c. New medical devices make the elderly more dependent on other people.

______d. Home computers bring work to the home allowing for more time to be spent at home.

______e. Family leisure activities often involve using a technological device.

5. Select true statements concerning the impact of technology on the workplace by placing a "T" or "F" next to the true or false statements.

______a. The types of jobs available to workers changes with technology.

______b. Adults can expect to hold the same job their entire working life.

______c. The need for manual labor has increased with the technological automation of industry and robots.

______d. Flex-time gives employees the freedom to set their own working hours within a given framework.

______e. Some companies provide child care as a benefit to their employees.

Written Test

6. Complete the following statements concerning the impact of technology on education by filling in the blanks with appropriate answers.

   a. Technology allows many aspects of education to be accomplished more efficiently. Computers are used by students for ________________________.

   b. Technology helps to bring the world to the student. ______________________ make talk-back television and teleconferencing possible by picking up signals and transmitting them to education sites.

7. Distinguish between the positive and negative effects of technology on the family by placing a "P" in the blanks beside statements that are "Positive" and an "N" in the blanks beside statements that are "Negative."

   ______a. Home health care for the elderly using technology is less expensive than hospitalization.

   ______b. Employers have become more responsive to employees' needs.

   ______c. Job mobility may lessen family support.

   ______d. Telecommuting allows work-at-home opportunities.

   ______e. Retraining for employment changes may leave the family head-of-household unemployed.

   ______f. Caring for the elderly at home increases family stress and may invade family privacy by care providers from health service programs.

***Permission to duplicate this test is granted.**

Family Living
Unit 2

Unit Evaluation Form

Student Name ______________________________ Unit Rating ________

Assignment Sheet 1—Evaluate the Mobility of Your Extended Family Rating ______

Comments: ____

____

Assignment Sheet 2—Evaluate the Costs of New Technological Devices for the Family Rating ______

Comments: ____

____

Assignment Sheet 3—Evaluate the Role of Technology in Given Family Case Studies Rating ______

Comments: ____

____

Assignment Sheet 4—Predict How Families, Work, and School Will Change in the Future Rating ______

Comments: ____

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________________ Date ________

Student Signature ______________________________ Date ________

***Permission to duplicate this form is granted.**

Family Living
Unit 2

Information Sheet

1. **Terms and definitions**

   a. **Boomerang kids** — Adult children who move back to live with their parents

   b. **Dual-working (dual-career) family** — A family with both spouses working

   c. **Flex-time** — An adjustment made by a business in the beginning and ending times of the work day to better meet the needs of workers

   d. **Head-of-household** — The individual in a family who is the chief financial provider

   e. **Mobility** — The movement of families between dwellings and between cities or states

   f. **Quality of life** — A person's feelings of fulfillment based on personal attitudes toward family, job, and self

   g. **Respite care** — Services provided to families to enable them to take a break from the responsibility of caring for a family member with a disability or illness

   h. **Sandwich generation** — People who must care for both their children and their parents

      Note: This generation is "sandwiched" between the two groups needing their help.

   i. **Single-parent** — An unmarried parent who has never been married, is divorced, or is separated from the spouse

   j. **Telecommuting** — Working at home using a computer that communicates with the main computers at a business

      Note: This allows for work-at-home situations.

Information Sheet

2. Impact of technology on family relationships

a. **Increased mobility**

(1) Families move due to job changes and the specialized careers caused by advanced technology.

(2) Families have become scattered across the country/world.

(3) Individuals seek support from friends, neighbors, and co-workers, rather than solely from the family due mainly to long distances.

(4) Long-distance moves increase family stress.

b. **Aging society**

(1) Individuals live longer due to improved medical care and improved nutrition.

(2) There is a longer "empty nest" stage of the family. Parents have more years to pursue their personal interests such as travel, hobbies, another career, or saving for retirement.

(3) The elderly often need assistance with household tasks and personal care as their health declines.

(4) The mobility of families has often left elderly family members alone and lonely in their old age when their needs are greatest.

(5) Retirement communities and nursing care facilities have experienced rapid growth.

c. **More working women**

(1) Single women are heads of households and provide the primary financial support for their family. They must work to provide the necessities.

(2) Married women also provide financial support for their family, but they may work to provide more of the technological "extras" and to maintain a higher standard of living.

(3) As more women work outside the home, family responsibilities in caring for children and the home also change.

Information Sheet

d. **Changes in communication**

   (1) Family members often spend less time together, so there are fewer opportunities for one-on-one communication.

   (2) Less communication can cause or worsen many family problems.

   (3) Many technological devices can be used to keep family members in touch with each other.

   Examples: Telephones, answering machines, tape recorders, computers

e. **More contraception choices**

   (1) Advances in the technology of contraception allow families to plan the size of their family and the spacing between children.

   (2) This has helped to result in smaller families.

3. **Technological devices used by the family**

   a. **Answering machines** — Screen telephone calls and record callers' messages

   b. **Calculators** — Help perform math functions very quickly and accurately

   c. **Cellular phones** — Allow for telephone communication while away from home/office

   d. **Disability devices** — Promote independent living for people with disabilities

   Examples: Phones for the deaf, special computers, medical equipment designed for home use, wheelchairs

   e. **Emergency notification devices and services** — Help people, especially children, elderly, and disabled, contact police, ambulance, fire department, or neighbor when an emergency occurs

   Examples: Medical alert, Lifecall, picture phones, 911 telephone service

Information Sheet

f. **Entertainment equipment** — Record and/or entertain family members with musical or theatrical performances or family events

Examples: Radios, cassette tape recorders/players, compact disk (CD) players, televisions, video cassette recorders (VCRs), video camera recorders (camcorders)

g. **Exercise equipment** — Used for home physical fitness

Examples: Stationary bicycles, treadmills, rowing machines, trampolines, stair machines

h. **Home security systems** — Notify authorities when home is entered improperly or illegally; may include the use of alarms and lights

i. **Kitchen and laundry appliances** — Used for household chores; many have electronic controls and new safety or energy-efficiency features

j. **Pagers** — Portable electronic devices that beep when a special radio signal is sent to tell the carrier to contact his/her home or workplace

k. **Personal (home) computers** — Store, retrieve, and process large amounts of information (data)

l. **Remote controls** — Operate technological devices from a distance (remote location)

Examples: Television remote control, garage door opener, speaker phone, stereo remote control

4. **Technology that has changed family leisure activities**

a. **Cable TV/Pay TV** — Provides a greater variety of television entertainment, information, and educational opportunities, but then allows less time for communicating, reading, or pursuing hobbies

b. **Cellular phones/pagers/answering machines** — Frees up time previously spent waiting for phone calls

c. **Home video games** — Entertains and challenges many people, especially children

Information Sheet

d. **Medical devices and identifications for elderly and disabled** — Allow the elderly and disabled to live at home without constant care

e. **Personal (home) computer** — Allows family members to keep accurate household records, organize budgets, play computer games, or complete homework assignments

Note: Family members who work at home on a computer may have increased leisure time because they do not have to commute to work. However, part of their home time is work time, not leisure time.

f. **Remote controls** — Allow devices to be operated from your seat with the touch of a button

g. **Video cassette recorder (VCR)** — Allows families to record or rent programs of their choice if regular programming is unappealing

h. **Video camera recorder (camcorder)** — Allows families to record special events and family activities as instant home movies

5. **Impact of technology on the workplace**

Note: Increasing numbers of companies, including small companies, are adopting work and family benefits to attract and keep highly qualified workers, especially a growing number of women.

a. **Job shift**

(1) The types of jobs available changes with new technology.

(2) There has been a decrease in the number of manufacturing jobs.

(3) There has been an increase in information processing and service jobs in areas such as finance, insurance, real estate, children and elder care, medical care, public utilities, and transportation.

Information Sheet

b. **Adult retraining**

   (1) The need for manual labor has declined with the technological automation of industry and robots.

   (2) This shift in the workforce emphasizes the need for advanced and continuing education, training, and retraining.

   (3) Adults can expect to change jobs several times in their working life.

c. **Work schedules** — New schedules are possible because of technology.

   (1) Part-time positions allow for more free time, more time at home with children, and seasonal work loads for industry.

   (2) Flex-time gives employees the freedom to set their own working hours within a given framework.

   Examples: 8-4, 7-3, 4-day week (10 hours each day), 5-day week (8 hours each day)

   (3) Shared jobs allow two people to share the hours and duties of one full-time job.

d. **Company-provided child care** (on-site or nearby) — Allows working parents to be closer to their children. Child care expense may be partially or totally covered by the company as an employee benefit.

6. **Impact of technology on education**

   a. Technology allows many aspects of education to be accomplished more efficiently.

      (1) New technologically advanced equipment is used to make the physical conditions at schools more pleasant, to demonstrate occupational skills, and to help students with special needs.

      (2) Computers are used throughout education.

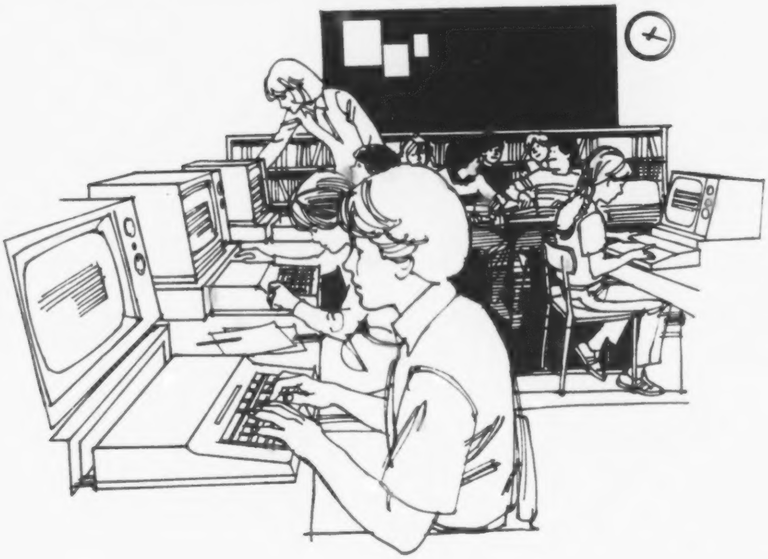
         (a) By students for math and reading drills, to take tests, and to design projects

         (b) By teachers to write curriculum, to grade and record tests, and to design posters

Information Sheet

(c) By administrators to keep financial records for the school, to maintain academic records for students, and to design newsletters or reports

Figure 1—Computers in schools



b. Technology helps to bring the world to the student.

(1) Satellites pick up signals from around the world and transmit them to education sites.

(2) Satellites allow talk-back television and teleconferencing to make special courses available to all schools.

(3) Many extension classes can also be viewed on home television for homebound students or individuals interested in continuing their education at home.

Information Sheet

7. Positive and negative effects of technology on the family

a. **Positive effects**

(1) Home health care made available through medical advancements is less expensive than hospitalization or nursing care facilities and allows for an improved quality of life for the elderly or disabled person.

(2) Telecommuting allows work-at-home opportunities.

(3) Employers have become more aware and responsive to employees' needs in order to attract and retain workers.

(4) Using technology at home makes adjustments to the workplace easier.

(5) Technology responds to the needs of more personal choices, freedom, and security.

(6) Persons with disabilities can achieve greater independence.

b. **Negative effects**

(1) As technology increases in leisure life, communication tends to decrease.

(2) Medical advances now available so individuals can remain at home may burden the time and expenses of family members who care for an ill, disabled, or elderly person in the home. Also, daily invasion of privacy occurs by care providers.

(3) Retraining for employment changes may leave the family head-of-household unemployed.

(4) Job mobility may lessen family support.

Family Living
Unit 2

Assignment Sheet 1—Evaluate the Mobility of Your Extended Family

Name ______________________ Overall Rating ________

Evaluation criteria	Rating
Locations of family members are identified	______
Questions are answered appropriately	______

Introduction: Families in the United States are moving to new cities and states in great numbers. Statistically, the average family moves every 5 years; however, some families move much more often than this. This assignment sheet will help you examine the mobility of your familty and the effect it has had on family members.

Directions: List all the relatives you can think of and where they live. Then place a dot on the given map to indicate the location of their home and answer the questions that follow about family mobility.

1. List all your relatives and where they live.

   Example: Grandmother Long — Dallas, TX

Name of Relative	Location of Home

Assignment Sheet 1

2. Place dots on the following map to show where your relatives live in the U.S.

3. Place stars on the map to show where your immediate family has lived in the U.S.

4. List reasons why your family has moved. ____________________

____

____

5. Has technological advancement in the workplace (or lack of technological opportunities in the area) been a factor in the family's decision to move? Explain ____________________

____

Assignment Sheet 1

6. Has the need for retraining for a career been involved in the family's decision to move?

Explain ______________________________

____

7. What are some positive effects of moving? ______________________________

____

8. What are some negative effects of moving on family members? ______________________________

____

____

9. What is the longest time your family has lived in a city/home? ______________________________

10. What is the shortest time your family has lived in a city/home? ______________________________

11. How often do you see the relatives that live

   a. in your city? ______________________________

   b. in your state? ______________________________

   c. in another state? ______________________________

12. What determines when you see your relatives who don't live in your city? ______________________________

____

13. Does the distance between relatives affect your relationship with them? ______________________________

Explain ______________________________

____

14. What types of technology can be used to keep the extended family in closer contact?

____

Family Living
Unit 2

Assignment Sheet 2—Evaluate the Cost of New Technological Devices for the Family

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Ten devices, costs, and sources are listed	_____
Questions are answered appropriately	_____

Introduction: Technological devices are used by family members in their everyday activities. Some devices are used by all family members on a daily basis. Other devices are used less often. This assignment sheet will help you determine the cost effectiveness of these technological devices.

Directions: Complete the following chart and then answer the questions about technological devices.

1. Use catalogs to determine the prices of ten (10) technological devices used by families.

DEVICE	SELLING PRICE	(COMPANY) SOURCE
a.		
b.		
c.		
d.		
e.		
f.		
g.		
h.		
i.		
j.		

Assignment Sheet 2

2. What technological devices have become available to families within the last 2-3 years?

3. Which of these devices do you consider "necessities" for the family? Why?

4. Which devices are considered luxuries? Why?

5. What information about the product helped you determine whether an item was a necessity or a luxury?

6. Do you think inexpensive devices are used more than expensive devices by families? Yes/No Explain

Family Living
Unit 2

Assignment Sheet 3—Evaluate the Role of Technology in Given Family Case Studies

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Questions are answered appropriately	______

Introductions: Technology impacts on family life by causing change and by creating devices to help family members. In the case studies on this assignment sheet, you are asked to evaluate alternatives available to family members and the role that technology plays in each situation.

Directions: Analyze the information presented in each case study to determine the role of technology in family issues as you answer each question.

Case A: Juan's 85-year-old father, Manuel, has failing health and can no longer safely live alone in his own home. Juan is 63, divorced, and currently single.

1. What choices does Juan have? ______________________________

   ____

2. What do you think is the best choice? Why? ______________________________

   ____

3. What could cause stress for Juan based on his decision? ______________________________

   ____

4. How could technology help this situation? ______________________________

   ____

   ____

Assignment Sheet 3

Case B: Bob and Kim's oldest child, Maya, is single, 32, and working full-time. She wants to move back home.

1. What situations might have caused Maya to want to move back home? ______

   ______

   ______

2. What are Bob and Kim's choices? ______

   ______

3. What choice do you think they should make? Why? ______

   ______

4. What stresses might they feel based on their decision? ______

   ______

Case C: Jennifer and Jack are a dual-career family with a newborn baby, Rose.

1. What technological devices might they need to purchase over the next several years?

   ______

   ______

2. What stresses will they face as working parents? ______

   ______

   ______

3. Which technological devices can ease their stress? Explain. ______

   ______

   ______

Assignment Sheet 3

Case D: Angela is a new mother and plans to set up her office at home through telecommuting via computer until her child is old enough for public school.

1. What new stresses can Angela expect? ______________________________

   ____

2. How can technological devices help Angela's situation? ____________________

   ____

3. Do you think Angela's quality of life will be better or worse? Explain. __________

   ____

   ____

Family Living
Unit 2

Assignment Sheet 4—Predict How Families, Work, and School Will Change in the Future

Name ____________________ Overall Rating ________

Evaluation criteria	**Rating**
Predictions are well-written and fully explained	______
Predictions are insightful and creative	______

Introduction: This unit has examined the impact that technology has had on family relationships and the changes it has brought on society. In this assignment sheet you have the opportunity to be a futurist and make predictions about what you believe will occur in family life, schools, and the workplace based on technology that is yet to be.

Directions: Answer the questions below to make predictions about technology and families.

1. What changes do you feel will occur in the home/family of the future?
   a. In 10 years? ____________________
   b. In 50 years? ____________________

2. How will schools be different in the future?
   a. In 10 years? ____________________
   b. In 50 years? ____________________

Assignment Sheet 4

3. How will work activities be different in the future?

    a. In 10 years? ______________________________

    ____

    b. In 50 years? ______________________________

    ____

    ____

4. What positive changes have you predicted?

    ____

    ____

5. What negative changes have you predicted?

    ____

    ____

6. How old will you be

    a. In 10 years? ______

    b. In 50 years? ______

7. Of what you predicted, what one thing do you feel will most likely happen? Explain.

    ____

    ____

    ____

Child Development
Unit 3

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss the impact of technology on the family in the area of child development. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to child development with their correct definitions.
2. Discuss positive and negative impacts of technology on child development.
3. Match unborn child technology with the correct definitions.
4. List examples of technology for infants.
5. List examples of technology used during early childhood.
6. Discuss ways children with special needs benefit from technology.
7. Identify positive and negative impacts of technology on children and their families based on actual legal case studies. (Assignment Sheet 1)
8. Evaluate technology being used by a child. (Assignment Sheet 2)
9. Predict how technology will change child development. (Assignment Sheet 3)

Child Development
Unit 3

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives.
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Give written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Show examples of the technology devices used in child development. Many of these are listed in the Information Sheet. Demonstrate how they work, and allow students to experiment with them firsthand. This reinforces the unit content through **tactile learning skills**.

2. Have students determine the costs of the technology devices on display. How can these costs impact on child development? Have students discuss which devices they think are worth the costs, and which ones are not. This activity reinforces the students' **critical thinking skills**.

3. Have students list on the chalkboard the names of common video games. Then have them classify them according to the appropriate age groups that they were designed for. Discuss the skills gained from video games. Also have them discuss the disadvantages of video games. Discussions like this can reinforce **communication skills, creative thinking and critical thinking skills,** and **group effectiveness skills**.

4. If technology continues to emphasize mental development, how can parents and teachers encourage physical development? What new technology could help in the physical development area? Students could answer these questions in a number of ways: Class discussion, written essays, oral reports, interviews with people in their community, or brainstorming in smaller groups. This activity could also be an optional, extra credit assignment. **Creative and critical thinking skills** are emphasized.

5. Survey the class and ask—How many students have used computers? Where did they use them? (at school? at home?) What did they use them for? (drills? assignments that required typing? financial reports?) How long have they been using them? How soon do they think children should start using them? How will the future be affected by computers? What correlation can you or the class find between early or active computer users and their views about computers? Discussions like this can reinforce **communication skills, creative and critical thinking skills, personal management skills,** and **group effectiveness skills**.

6. Demonstrate computer software designed for children. Allow students to practice using the software. Discuss the purpose of each program.

   Note: If computers or this software is not available in your classroom, make arrangements for your students to visit an elementary classroom or computer laboratory using this software.

Suggested Activities

7. Invite a speaker from a local health center or arrange a tour of a health care facility so students can learn more about medical technology that impacts on child development. Have students write questions beforehand that they can ask. This activity can reinforce **writing foundation skills, communication skills,** and **group effectiveness skills**.

8. Discuss state and federal legislation concerning the education of students with special needs. Contact local teachers of special education or talented and gifted programs for up-to-date information.

9. For Assignment Sheet 1, you could divide the class into groups and have them discuss only one case study, and give an oral presentation to the class of how their group reacted to their assigned case. This could reinforce their **communication skills** and **group effectiveness skills** including **negotiation** and **teamwork**.

10. For Assignment Sheet 2, you need to make arrangements for students to observe and interact with children in local schools or child care centers.

11. For Assignment Sheet 3, you may wish to have a contest for the most creative, most useful, or most bizarre new invention designed by a student. Students could be the judges or you may want to involve community leaders as judges. This could improve students' **group effectiveness skills** including **self-esteem** and **motivation**, as well as reinforce **creative thinking skills**.

Resources Used in Developing This Unit

1. Stanton, David. "Discoveries." *Compute!'s PC Magazine*. July 1988, pp. 84-85.
2. Labich, Kenneth. "Can Your Career Hurt Your Kids?" *Fortune*. May 20, 1991, pp. 38-50.
3. "Court: Sperm Donor Can Claim Fatherhood." *Greensboro News & Record*. April 24, 1990.
4. DeBenedictis, Don J. "Surrogacy Contract Enforced." *ABA Journal*. January 1991, pp. 32-33.
5. Soler, Mark. "An Introduction to Children's Rights." *ABA Journal*. December 1, 1988, pp. 52-56.
6. Stewart, David O. "Juvenile Justice." *ABA Journal*. October 1990, pp. 50-56.
7. Gibbs, Nancy. "How America Has Run Out of Time." *Time*. April 24, 1989, pp. 58-67.
8. Pesanelli, David. "Education Takes to the Streets." *The Futurist*. March-April 1990, pp. 29-33.
9. Riche, Martha Farnsworth. "The Future of the Family." *American Demographics*. March 1991, pp. 44-46.

Child Development
Unit 3

Answers to Written Test

1. a. 3
   b. 6
   c. 2
   d. 4
   e. 5

2. a. Positive impacts—Any two of the following:

   (1) Increased competence of children using computers and machines
   (2) More innovative child development products, toys, and equipment
   (3) Increased awareness of the world by children because of more exposure through the media
   (4) More opportunities for problem-solving games and tutoring through the use of the computer
   (5) Later ages for marrying

   b. Negative impacts—Any two of the following:

   (1) Less human interaction
   (2) Increased stress
   (3) Less physical activity
   (4) Less uniqueness

3. a. 4
   b. 3
   c. 1
   d. 6
   e. 2

4. Any two of the following:

   a. Bottle nursery liners
   b. Improved fabrics and products
   c. Digital thermometers
   d. Electronic toys
   e. Humidifiers
   f. Monitors

Answers to Written Test

5. Any one of the following:

   a. Computerized games and toys
   b. Music and books on tape
   c. Aseptic packages for drinks and snacks
   d. More nutritious foods

6. Discussions should cover **one** of the following: (a, b, or c)

   a. Hearing impaired

      (1) New hearing aids are smaller and stronger.
      (2) New FM loops amplify sound within the loop and cut down on outside noise.
      (3) Voice synthesizer connects to computer for children who are also mute or have problems speaking.

   b. Sight impaired

      (1) New lens implants may correct eye defects.
      (2) Improved magnifiers, glasses, and light boxes are useful for minimally impaired.
      (3) Color overlays help child distinguish between parts of a picture.
      (4) Automatic brailler uses computer data printed on special braille printer.

   c. Physically disabled

      (1) New designs are available for standers, walkers, scooters, and electric wheelchairs for children with problems walking.
      (2) Hydraulic, pneumatic, or electric lifts assist children in or out of vehicles or therapy baths.
      (3) Fingertip devices on wheelchairs operate home or school devices such as turning on the light, closing the door, or opening the curtains.
      (4) Computer-assisted toys and learning devices are touch-, motion-, sound-, or light-sensitive.

Child Development
Unit 3

Written Test

Name ______________________________ Score ______________

1. Match the terms on the right with the correct definitions.

______a. Using tactile responses to become familiar with new technology

______b. Established ideals of life that may include objects, customs, and actions that a given society regards as desirable

______c. Joining of male sperm with female ovum resulting in pregnancy

______d. Surgical removal of all or part of a female's reproductive organs

______e. Death due to unknown causes of an infant in apparently good health

1. Artificial environment
2. Conception
3. High touch
4. Hysterectomy
5. Sudden Infant Death Syndrome
6. Values

2. Discuss at least two positive and negative impacts of technology on child development.

a. Positive impacts

(1) ____

(2) ____

b. Negative impacts

(1) ____

(2) ____

Written Test

3. Match unborn child technology on the right with the correct definitions.

______a. Forming an embryo using donor ovum and sperm outside the living body in an artificial environment

______b. Information given to prospective parents about the compatibilities of their inheritable traits, especially concerning diseases that could be passed on to the next generation

______c. Surgical insertion of a hollow needle through the abdominal wall into the uterus of a pregnant female to obtain amniotic fluid that can be tested for fetal sex and chromosomal abnormalities

______d. Formation of a two-dimensional image using sound waves above the range of human hearing in order to examine internal body structures such as the female uterus; can be used to determine fetal age, number of fetuses, and possible physical abnormalities

______e. Introduction of male semen into the female uterus or oviduct by other than natural means (without sexual intercourse)

1. Amniocentesis
2. Artificial insemination
3. Genetic counseling
4. In vitro fertilization
5. Surrogate
6. Ultrasound

4. List two examples of technology for infants.

a. ____

b. ____

5. List one example of technology used during early childhood.

____

Written Test

6. Discuss ways children with special needs benefit from technology. Focus your discussion on **one** of the following: hearing impaired, sight impaired, or physically disabled.

____

____

____

____

____

____

Child Development
Unit 3

Unit Evaluation Form

Student Name ______________________________ Unit Rating __________

Assignment Sheet 1—Identify Positive and Negative Impacts of Technology on Children and Their Families Based on Actual Legal Case Studies Rating ______

Comments: ____

____

Assignment Sheet 2—Evaluate Technology Being Used by a Child Rating ______

Comments: ____

____

Assignment Sheet 3—Predict How Technology Will Change Child Development Rating ______

Comments: ____

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________________ Date __________

Student Signature ______________________________ Date __________

***Permission to duplicate this form is granted.**

Child Development
Unit 3

Information Sheet

1. **Terms and definitions**

   a. **Conception** — Joining of male sperm with female ovum resulting in pregnancy

   b. **High touch** — Using tactile (touch) responses to become familiar with new technology

      Note: High touch is a combination of soft touch (human hands-on experiences) with high tech (advanced computerized technology).

   c. **Hysterectomy** — Surgical removal of all or part of a female's reproductive organs

   d. **Sudden Infant Death Syndrome (SIDS)** — Death due to unknown causes of an infant in apparently good health

   e. **Values** — Established ideals of life that may include objects, customs, and actions that a given society regards as desirable

2. **Positive and negative impacts of technology on child development**

   a. Positive impacts

      (1) Increased competence of children using computers and machines

         (a) Computers and machine technology will be used increasingly by industry to maintain their competitiveness in the global economy.

         (b) Computers offer increased flexibility and productivity needed by industry.

      (2) More innovative child development products, toys, and equipment

      (3) Increased awareness of the world by children because of more exposure through the media

Information Sheet

(4) More opportunities for problem-solving games and tutoring through the use of the computer

  (a) Computer technology is especially suited for teaching skills that need to be practiced many times.

  (b) Tutorial drills are often frustrating because learning is slow. Computers don't get frustrated or annoyed when students make errors.

(5) Later ages for marrying

  (a) Couples are marrying and having children later when they are more financially and emotionally prepared for parenting. This is an indirect effect of technology.

  (b) Because technology has increased our knowledge base, advanced education is required to just cover the new basics. Therefore, couples are waiting longer to marry.

b. Negative impacts

(1) Less human interaction

  (a) Studies show that there is less one-to-one contact between people, including co-workers, partners, and parents and children.

  (b) Oral communication skills, human relations skills, and values are learned by children through human interaction. These qualities are not being passed on well to new technology-based generations.

(2) Increased stress

  (a) Stress occurs when technology systems that we depend on break down.

  (b) Stress also occurs when you feel that you do not have enough time to accomplish your work or your leisure activities.

  (c) There is also increased stress from trying to stay up-to-date on new technological inventions and breakthroughs.

Information Sheet

(3) Less physical activity

   (a) Technology encourages spectators over participants. "Couch potatoes" watch television for hours at a time.

   (b) Many technology products are designed to make work easier and less physically demanding.

   Examples: Instead of pulling open the garage door, we now push a button to open it. Children can push the accelerator on battery-operated bicycles instead of pedaling.

(4) Less uniqueness—More products are mass produced, resulting in more look-alikes.

3. Unborn child technology

a. **Amniocentesis** — Surgical insertion of a hollow needle through the abdominal wall into the uterus of a pregnant female to obtain amniotic fluid that can be tested for fetal sex and chromosomal abnormalities

b. **Artificial insemination** — Introduction of male semen into the female uterus or oviduct by other than natural means (without sexual intercourse)

c. **Genetic counseling** — Information given to prospective parents about the compatibilities of their inheritable traits, especially concerning diseases that could be passed on to the next generation

d. **In vitro fertilization** — Forming an embryo using donor ovum and sperm outside the living body in an artificial environment

   Note: This procedure is primarily used when physical problems make conception difficult for a couple.

e. **Surrogate** — Person used as a substitute for the mother to carry a developing fetus to term

   Note: The exact circumstances where this may be used varies from state to state. Primarily a surrogate enters a legal contract when a woman is unable to carry a child. However, there are many other situations that have involved surrogates.

f. **Ultrasound** — Formation of a two-dimensional image using sound waves above the range of human hearing in order to examine internal body structures such as the female uterus; can be used to determine fetal age, number of fetuses, and possible physical abnormalities

Information Sheet

4. **Technology for infants**

   a. Bottle nursing liners for cleanliness and sanitation giving less air to baby as they are nursing

   b. Improved fabrics and products for health and comfort

      Examples: New absorbent fibers keep baby drier and prevent diaper rash and other complications such as toxic shock syndrome. Many plastic toys are less dangerous for child to play with rather than metal or wooden toys.

   c. Digital thermometers for quicker and more accurate data

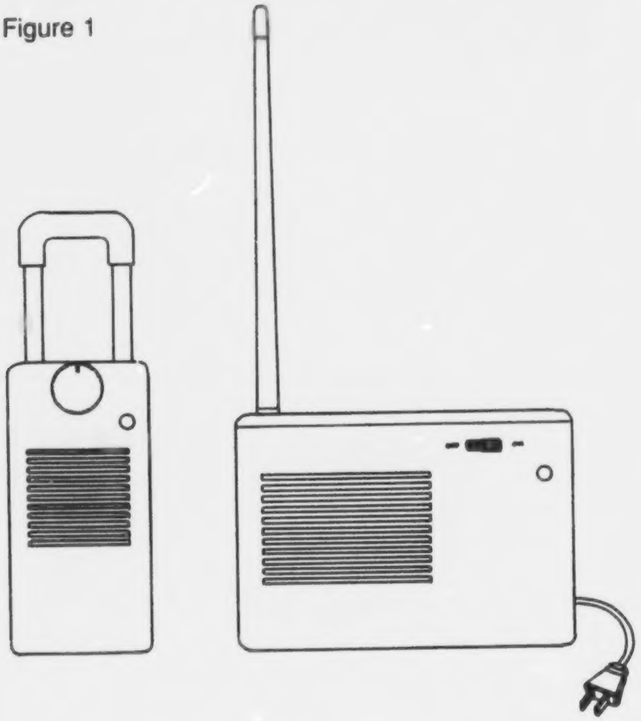
   d. Electronic toys that may be light or voice activated

   e. Humidifiers to control the child's environment

   f. Monitors to give the current status of the infant

      (1) Small inexpensive models act as an intercom between the parent and child when parent is not in the same room with child.

Figure 1



Information Sheet

(2) Other more sophisticated models monitor the child's heart rate or respiration. Alarms sound when the child stops breathing so parent or caregiver can try to revive the child.

Note: These monitors are designed to be used on infants with irregular heart or breathing patterns or possible sudden infant death syndrome.

5. Technology used during early childhood

a. Toys

(1) Computerized games and toys—Stimulate the child's imagination and may teach the child sounds, colors, and classifications.

(2) Music and books on tape—Improved products are more durable and easier to use so child can operate these materials with little adult help.

Note: Toy lending libraries permit child to try out before purchasing.

b. Foods

(1) Aseptic packaging for drinks and snacks

(2) More nutritious foods specially designed for this age

6. Ways children with special needs benefit from technology

Note: Technology helps children with special needs control their environment in special ways.

a. Hearing (auditory) impaired

(1) New hearing aids are smaller and stronger.

(2) New FM loops amplify sound within the loop and cut down on outside noise.

(3) Voice synthesizer connects to computer for children who are also mute or have problems speaking.

b. Sight (visually) impaired

(1) New lens implants may correct eye defects.

(2) Improved magnifiers, glasses, and light boxes are useful for minimally impaired.

Information Sheet

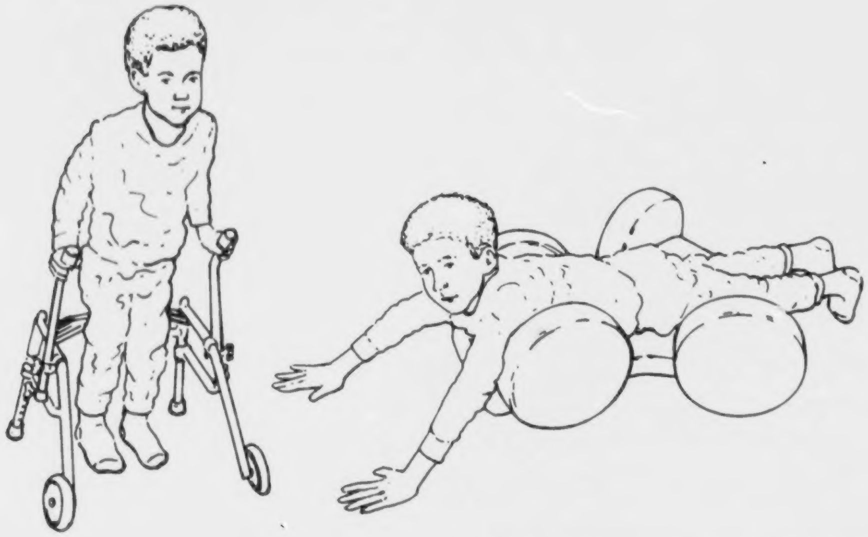
(3) Color overlays help child distinguish between parts of a picture.

(4) Automatic brailler uses computer data printed on special braille printer.

c. Physically disabled

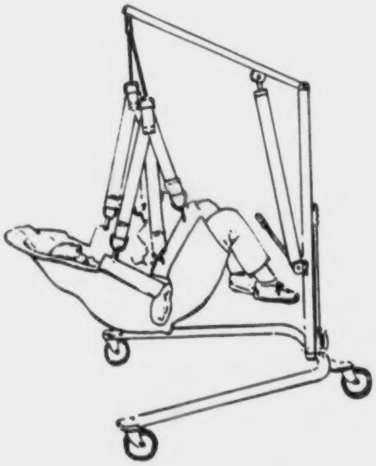
(1) New designs are available for standers, walkers, scooters, and electric wheelchairs for children who have problems walking.

Figure 2



(2) Special lifts assist caregivers in moving children who cannot move themselves.

Figure 3

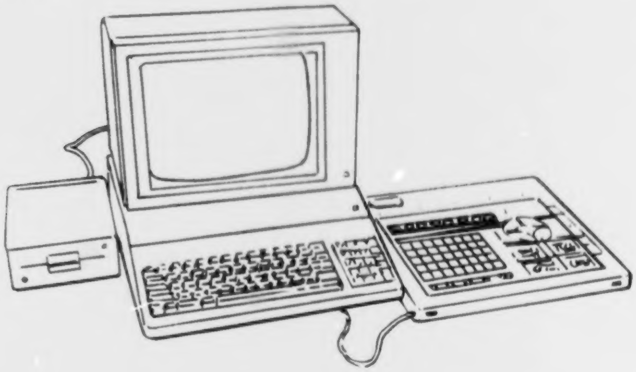


Information Sheet

(3) Fingertip devices on wheelchairs operate home or school devices such as turning on the light, closing the door, or opening the curtains.

(4) Computer-assisted toys and learning devices are touch-, motion-, sound-, or light-sensitive.

Figure 4



(a) Sensors are attached to body parts that the child can control, and through the help of the computer, the child can move that part to control other devices in their environment.

Example: If the child can only move an eyebrow, then a switch can be attached to the eyebrow to allow the child to type messages on the computer or other tasks that they want to accomplish.

(b) Duma's power pads allow a child to touch the pad for what they want to say or do.

Examples: "I want a drink of water." "My name is Maria."

(c) Studies show that the earlier the child can begin using these technology devices, the more functional that child will become.

Child Development
Unit 3

Assignment Sheet 1—Identify Positive and Negative Impacts of Technology on Children and Their Families Based on Actual Legal Case Studies

Name ______________________________ Overall Rating __________

Evaluation criteria	Rating
Two positive impacts appropriately given for each case study	______
Two negative impacts appropriately given for each case study	______

Introduction: Technology has created many situations in which individual and family rights are unclear. Therefore, these cases are taken to the courts so judges can decide what, if any, constitutional rights are involved and what uses of technology will not be legally allowed.

Directions: Read the following case studies carefully. Each of these situations has been heard in the court system. For each case study, list two positive and two negative impacts this situation would have on the family.

Case Study 1—Surrogacy Contract

Who is a baby's natural mother? The simple answer in most states has been the woman who gives birth to it. But that answer is wrong, a California superior judge ruled, when the baby does not grow from the woman's own ovum, and when she is a surrogate mother with no genetic connection to the child. "(A surrogate carrying a genetic child for a couple does not acquire parental rights . . .)"

The 29-year-old licensed vocational nurse, Anna Johnson, gave birth to the baby that was produced from the artificially inseminated mother's ovum and the father's sperm. She was denied custody and her visitation rights were terminated. The judge declared the baby's mother and father were Chris and Mark who had supplied the egg and sperm for fertilization. The couple paid Johnson $10,000.

The judge compared Johnson to a foster mother who provided "care, protection, and nurture during the period of time that the natural mother, Chris, was unable to care for the child." Chris had had a hysterectomy.

a. Positive impacts

(1) ____

____

(2) ____

____

Assignment Sheet 1

b. Negative impacts

(1) ____________________

____

(2) ____________________

____

Case Study 2—Automobile Workers vs. Johnson Controls, INC.

Johnson Controls uses substantial quantities of lead to manufacture batteries in plants in nine different states. The parties agreed that excessive exposure to lead caused risks for workers and to babies of women workers. The women workers insisted that the offspring of male battery workers face similar risks, which the company contested.

In 1977, Johnson Controls announced a policy that women expecting to bear children should not choose a job with substantial lead exposure. The policy stopped short of barring such employment of women, but a woman seeking such jobs was required to sign a statement acknowledging the risk of having a child while she was exposed to lead. The company policy was changed in 1982 to exclude women from jobs exposing them to lead unless the woman produced medical documentation that she could not have children.

a. Positive impacts

(1) ____________________

____

(2) ____________________

____

b. Negative impacts

(1) ____________________

____

(2) ____________________

____

Assignment Sheet 1

Case Study 3—Sperm Donor

A district judge declared "Any man who agrees to help a woman bear a child by donating sperm has a constitutional right to claim fatherhood . . . " An unmarried Oregon woman and a California man had been friends for a long period of time. He agreed to help her have a baby by donating the sperm for the fertilization. He now has the right to claim fatherhood to the child.

a. Positive impacts

(1) ______________________________

____

(2) ______________________________

____

b. Negative impacts

(1) ______________________________

____

(2) ______________________________

____

Child Development
Unit 3

Assignment Sheet 2—Evaluate Technology Being Used by a Child

Name ______________________ Overall Rating ________

Evaluation criteria	**Rating**
Observed and/or interacted with child using technology	______
Answered questions appropriately	______

Introduction: A child's interaction with technology is more common each day as we enter into a technology world. However, a child does not always use technology as it was intended. Through observation and/or interaction you will see how a child uses technology. You can then evaluate the positive and negative impacts of that technology on the child.

Directions: Visit a child-care center or school, and observe the different children using technology. Then select one child (with or without a disability), and observe and/or interact for 30-45 minutes with that child as he/she uses a technological toy or device. Answer the following questions.

1. What was the child's name? ______________________
2. What technology device was he/she using? ______________________
3. How well did the child use the device? ______________________
4. Was the child using the technology as it was intended? Explain. ______________________
   ____
5. What positive benefits could the child gain from that technology? ______________________
   ____
6. What negative effects could there be from that technology? ______________________
   ____
7. Overall, do you think the child is developing positively or negatively as a result of using the technology you observed? Explain. ______________________
   ____

Child Development
Unit 3

Assignment Sheet 3—Predict How Technology Will Change Child Development

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Selected new technology	______
Wrote discussion in paragraph form using correct grammar	______

Introduction: As new technology develops, changes occur in response to these new developments. One area greatly impacted by technology is child development. This assignment will give you the opportunity to predict what new changes will occur in child development because of technology.

Directions: Select a new technology, and discuss how that technology will change child development.

Individual and Family Health
Unit 4

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss new technology as it relates to individual and family health. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to health technology with their correct definitions.
2. List purposes of technology in health care.
3. Distinguish between the positive and negative effects of technology on individual health.
4. Match technological advancements in health care with their correct descriptions.
5. Match potential health hazards in the workplace created by technology with their correct descriptions.
6. Name technological health advancements for the special needs population.
7. Discuss ways technology has helped to improve an individual's wellness program.
8. List current ethical issues related to technological advancements in health care.
9. Evaluate given situations about concerns with organ transplants. (Assignment Sheet 1)
10. Evaluate given situations about concerns with medical life support. (Assignment Sheet 2)

Individual and Family Health
Unit 4

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives.
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Give written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Introduce the unit by viewing the video, *You, Me, and Technology: Health and Technologies*. See ordering information in the next section. Videos can help provide **motivation** and reinforce **communication skills**.

2. Have students discuss whether they think technology has had more positive impact on health care or more negative impact. This discussion can help reinforce students' **communication skills** and **problem solving skills**.

3. Take a field trip to a fitness center, wellness center, medical center or hospital, or nursing center so students can observe new technology being used in health care.

    a. You may want to videotape the tour to use with later classes or for students who may have missed the trip.

    b. After returning to the classroom, ask students questions about the tour (oral discussion) or have them summarize the main points of the tour in writing.

    c. Tours can help keep your curriculum up-to-date, as well as improve students' understanding of health care technology. This also reinforces **communication skills, motivation, and interpersonal relations**.

4. Invite a local doctor or nurse to discuss new technology in health care, and demonstrate the new products now available that make health care easier for them and for their patients.

    Examples: Tamper-proof bottles for prescriptions, disposable gloves and syringes, digital thermometers, and other items they could easily bring to the classroom.

    This activity can improve the students' **communication skills**.

Suggested Activities

5. Have students prepare questions so they can interview individuals involved in different occupations to determine what, if any, health hazards are involved in their jobs, especially those caused by technology.

   Examples: Print shop employees, office workers, construction workers, medical center employees

   Interview questions could include:

   a. Are there any physical hazards at your work place?

   b. Does your work require any preventive safety measures or equipment?

   c. Do you receive any special instructions on the use of your equipment?

   d. Do you feel that technology has been harmful to your health?

   If individual interviews are not possible, you could have several workers come to talk to the class about occupational health hazards. Students could then ask them their questions. This activity reinforces **communication skills, creative thinking skills, and interpersonal relations**.

6. Have a design contest for students to develop a new technological device to aid a person with special needs. This could be a group or individual activity. Winners could be selected by the class, or you could form a panel of judges from the local health community. This contest reinforces **creative thinking skills, problem solving skills, self-esteem, and motivation**.

7. Have students research current periodicals about wellness and health maintenance. Students could give either written or oral reports on their findings. This reinforces **communication skills**.

8. Have students debate current ethical issues in health care. These are listed in Objective 8 of the Information Sheet. Students may also think of other issues. The issues could be assigned to different teams, with each team presenting the pros and cons of each issue to the class. This reinforces **communication skills and critical thinking skills**.

9. As a follow-up to the debates, ask each team what makes the issue so difficult to deal with? Would additional technology help to solve or only compound the problem?

10. Discuss the concept of "wellness." Describe the characteristics of a "well" person. Do students consider themselves "well?" Why or why not? This activity can reinforce students' **communication skills**.

Suggested Activities

11. Collect catalogs, pamphlets, and newspaper or magazine advertisements for new exercise equipment. Have students select the ones they think would be appropriate for their needs now and later in life.

    Examples: Bicycles, trampolines, rowing machines, weight lifting equipment

12. Discuss equipment that has been designed to replace outdoor activities and sports. Also discuss the advantages and disadvantages of the equipment over the actual activity or sport.

13. For Assignment Sheets 1 and 2, you may wish to divide the class into groups, and use these assignments as group activities. They would then also reinforce **teamwork**.

14. Discuss the laws of your state and policies of local hospitals regarding life support, living wills, and organ transplants. This will help students see the connection between ethical and legal issues affecting medical care in their community.

15. Invite a school nurse, local health department employee, or nursing student(s) to take students' blood pressure readings. Additional health care procedures that could be conducted by professionals for the class include blood typing, cholesterol screenings, and body fat analyses. If unusual or potentially serious readings are obtained, contact the school nurse and/or principal on what needs to be done to help those students in health danger.

16. Give students enrollment information about local CPR classes. Encourage students to attend.

17. Suggest to students that the class or FHA/HERO student organization could assist with the next local Red Cross blood drive or community health fair and screening. Supply students with this information at the appropriate time if they would like to help.

Resources Used In Developing This Unit

1. DiChristina, Mariette. "Home Newsfront." *Popular Science*. March 1991, p. 71.

2. *Journal of Health*. March-April 1991. Vol. 22, No. 2. Reston, VA.

3. *The New Good Housekeeping Family Health and Medical Guide*. New York: Hearst Corporation, 1989.

4. Rogers, Helen V. *Practical Nursing*, Vol. 1, Teacher Part II. Stillwater, OK: Curriculum and Instructional Materials Center, 1981.

5. Schaeffer, Charles, et. al. "Fitness: A Special Report." *Changing Times*. August, 1987, pp. 38-49.

Suggested Activities

6. Smith, Emily. "Developments to Watch." *Business Week*. June 10, 1991, p. 71.

7. "Top Ten Problems to Come." *U.S. News and World Report*. May 20, 1990, pp. 94-99.

Suggested Supplemental Resources

Note: Check with local or school library on the availability of health magazines such as *American Health* and *Today's Health*. You may want to subscribe to these so students can be informed about current developments.

A. Audiovisual materials

You, Me, and Technology: Health and Technologies. Available from:

Agency for Instructional Technology (AIT)
Box A
Bloomington, IN 47402
800-457-4509 or 812-339-2203

B. Computer software

Nutrient Analysis
Nutrition . . . Basics Plus
Think Thin . . . Lose to Win
Nutrient Analysis System 2, 3rd ed.
Lifeline: Nutrition (Career Aids)

Available from:

NASCO
901 Janesville Avenue
Fort Atkinson, WI 53538-0901
800-558-9595

C. Extension Fact Sheets—Contact your local cooperative extension service for any new fact sheets dealing with health issues.

Individual and Family Health
Unit 4

Answers to Written Test

1. a. 10
   b. 9
   c. 3
   d. 8
   e. 12
   f. 11
   g. 4
   h. 1
   i. 5

2. Any two of the following:

   a. Prevent and control diseases
   b. Cure illnesses and save lives
   c. Enhance or replace ailing body parts
   d. Alter body cells through biotechnology and genetic engineering to cure diseases and disabilities

3. a. +
   b. +
   c. –
   d. –
   e. +
   f. –
   g. +
   h. –
   i. +
   j. –

4. a. 3
   b. 5
   c. 4
   d. 1
   e. 2

5. a. 5
   b. 3
   c. 4
   d. 1
   e. 6

6. Any three of the following: (other suitable answers may be given)

   a. Motorized wheelchairs
   b. Prosthesis devices
   c. Computer networking for organ transplants, tissue matching
   d. Remote-controlled and voice-controlled computers
   e. Advanced medical treatments
   f. High-tech facilities

Answers to Written Test

7. Discussion may include:

   a. Physical

      (1) High-tech equipment for exercise, diagnostics, rehabilitation, and geriatric care
      (2) Computer analysis of blood or food nutrition
      (3) Computerized health appraisal with immediate feedback
      (4) Advanced clothing design to address specific health needs such as new walking shoes or orthopedic supports
      (5) Elimination of barriers to exercise such as indoor equipment to simulate outdoor activities and sports

   b. Mental and emotional

      (1) Safer, easier, and faster work-related responsibilities
      (2) More efficient methods of communication between doctors, patients, and family members
      (3) More control over diseases and more hope for cures to illnesses and diseases

8. Any two of the following: (other suitable answers may be given)

   a. Who takes reponsibility for connecting or disconnecting life-support systems?
   b. Who receives organ transplants?
   c. How is cosmetic surgery distinguished from reconstructive surgery?
   d. How has technology impacted on reproduction options?
   e. Are the results of the new treatments for diseases beneficial compared to the side effects produced?
   f. Who should pay for health care? Should care be denied if a person can't pay?

Individual and Family Health
Unit 4

Written Test

Name ________________________ Score ____________

1. Match the terms on the right with their correct definitions by writing the corresponding numbers on the blanks provided.

______a. Doing or requiring much sitting and little physical activity

______b. An artificial device to replace a missing body part

______c. A medical fiberoptic instrument used to see the inside of a hollow organ

______d. The surgical replacement of a diseased or destroyed organ with a healthy one

______e. Living with healthy choices so that one works toward optimal mental, physical, and emotional well-being

______f. Physical, chemical, or emotional factors that cause bodily or mental tension

______g. A state of physical, mental, and social well-being, including the absence of disease, illness, and pain

______h. The rhythmic forcing of air into and out of the lungs of a person whose breathing has stopped

______i. The capacity of an individual to obtain, interpret, and understand basic health information and services and the competencies to use such information and services in ways which are health enhancing

1. Artificial respiration
2. Electromagnetic fields
3. Endoscope
4. Health
5. Health literacy
6. Life-support system
7. Living will
8. Organ transplant
9. Prosthesis
10. Sedentary
11. Stress
12. Wellness

2. List two purposes of technology in health care.

a. ______________________________

b. ______________________________

Written Test

3. Distinguish between the positive and negative effects of technology on individual health by placing a "+" for positive or a "–" for negative in the blank before each factor.

______a. Improves medical procedures

______b. Provides more career opportunities in development, testing, research, and evaluation of technology

______c. Results in higher costs because of more drug options, more treatments, higher insurance rates, and newer facilities and equipment

______d. Creates environmental problems with contaminated medical wastes

______e. Allows individuals to live at home instead of in medical institutions

______f. Creates legal and ethical dilemmas

______g. Creates new and improved medical devices

______h. May create more complications arising from new drugs and treatments

______i. Increases life expectancy

______j. May result in increased stress related to newer advancements requiring greater productivity, more decisions about options available, and more education to stay informed

4. Match the technological advancements in health care on the right with their correct descriptions by writing the corresponding number in the blanks provided.

______a. Uses a narrow, very concentrated beam of light to cut and remove unwanted tissue

______b. Uses ultrasonic pressure waves for visualizing internal organs or small structures which will not show up on an X-ray photograph

______c. Uses sound waves for visualizing internal structures with great detail

1. Arthroscopic surgery
2. Medical alert devices
3. Laser surgery
4. Magnetic resonance imaging
5. Ultrasound
6. Joint replacements

Written Test

______d. Uses an endoscope and/or attachments for some surgical procedures

______e. Allow for immediate communication with caregivers for the elderly or disabled

5. Match potential health hazards in the workplace created by technology with their correct descriptions.

______a. Stress, anxiety, depression, and stress-induced physical illnesses such as headaches

______b. Loss of sight, hearing, limb, or life

______c. Back or muscle injuries

______d. Eye problems, carpal-tunnel syndrome, or low-level radiation exposure

______e. Respiratory problems

1. Computer hazards
2. Electromagnetic field hazards
3. Equipment hazards
4. Material-handling hazards
5. Mental hazards
6. "Sick" building hazards

6. Name three technological health advancements for the special needs population.

a. ______________________________

b. ______________________________

c. ______________________________

7. Discuss ways technology has helped to improve an individual's wellness program.

____

____

____

8. List two current ethical issues related to technological advancements in health care.

a. ______________________________

b. ______________________________

***Permission to duplicate this test is granted.**

Individual and Family Health
Unit 4

Unit Evaluation Form

Student Name ______________________________ Unit Rating __________

Assignment Sheet 1—Evaluate Given Situations About Concerns with Organ Transplants Rating ______

Comments: ____

____

Assignment Sheet 2—Evaluate Given Situations About Concerns with Medical Life Support Rating ______

Comments: ____

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________________ Date __________

Student Signature ______________________________ Date __________

*Permission to duplicate this form is granted.

Individual and Family Health
Unit 4

Information Sheet

1. **Terms and definitions**

   a. **Artificial respiration** — The rhythmic forcing of air into and out of the lungs of a person whose breathing has stopped

   b. **Electromagnetic fields** — Waves generated by variations in electric and magnetic field intensities

   c. **Endoscope** — A medical fiberoptic instrument used to see the inside of a hollow organ

      Note: Attachments may also be used through an endoscope that allow surgeons to obtain tissue samples or to perform some surgical procedures.

   d. **Health** — A state of physical, mental, and social well-being, including the absence of disease, illness, and pain

   e. **Health literacy** — The capacity of an individual to obtain, interpret, and understand basic health information and services and the competencies to use such information and services in ways which are health enhancing

   f. **Life-support system** — An artifical or natural system that provides items necessary for maintaining life or health

      Examples: Oxygen, food, water, temperature and pressure control, carbon dioxide removal, body waste removal

      Note: Artificial means of life support include the use of intravenous (IV) feeding, respirators, heart-lung machines, and kidney dialysis.

   g. **Living will** — A document written by a competent person that states his/her wishes regarding the use of artificial life-support systems when death is imminent

      Note: Living wills are not legally recognized in all states or countries.

   h. **Organ transplant** — The surgical replacement of a diseased or destroyed organ (such as kidney or liver) with a healthy one

   i. **Prosthesis** — An artificial device to replace a missing body part

Information Sheet

j. **Sedentary** — Doing or requiring much sitting and little physical activity

k. **Stress** — Physical, chemical, or emotional factors that cause bodily or mental tension

l. **Wellness** — Living with healthy choices so that one works toward optimal mental, physical, and emotional well-being

2. **Purposes of technology in health care**

a. **Prevent and control diseases**

Examples: Kidney dialysis machines filter the blood of patients with diseased kidneys, biotechnology-produced insulin helps control diabetes, and vaccines are used to prevent many diseases.

b. **Cure illness and save lives**

Examples: Chemotherapy and radiation help to arrest and cure cancer in many patients, and defibrillators can help to restart the heart after a heart attack.

c. **Enhance or replace ailing body parts**

Examples: Pacemakers deliver electrical impulses to stimulate or steady the rhythmic beating of the heart, artificial joints are used to replace joints ruined by disease or injury, and hearing aids help to amplify sound for the hearing impaired.

d. **Alter body cells through biotechnology and genetic engineering to cure diseases and disabilities**

Example: Human growth hormones are mass produced through biotechnology to create enough hormones to treat dwarfism at a reasonable cost.

Note: Although scientists cannot presently remove defective genes from humans, research is continuing and may be possible in the near future.

3. **Positive and negative effects of technology on individual health**

a. **Positive**

(1) Meets specific human needs

(2) Helps individuals cope with change

(3) Increases life expectancy

Information Sheet

(4) Provides more career opportunities in development, testing, research, and evaluation of technology

(5) Creates new and improved medical devices

(6) Improves medical procedures

(7) Develops new pharmaceutical products (drugs)

(8) Allows individuals to live at home instead of in medical institutions

b. **Negative**

(1) Results in higher costs because of more drug options, more treatments, higher insurance rates, and newer facilities and equipment

(2) May create more complications arising from new drugs and treatments

(3) Creates environmental problems with contaminated medical wastes and throw-away packaging

(4) Creates legal and ethical dilemmas

(5) May result in increased stress related to newer advancements requiring greater productivity, more decisions about options available, and more education to stay informed

4. **Technological advancements in health care**

a. **Magnetic resonance imaging (MRI)** — Uses sound waves for visualizing internal structures with great detail

b. **Ultrasound** — Uses ultrasonic pressure waves for visualizing internal organs or small structures which will not show up on an X-ray photograph

c. **Medical alert devices** — Allow for immediate communication with caregivers for the elderly or disabled

d. **Laser surgery** — Uses a narrow, very concentrated beam of light to cut and remove unwanted tissue

Note: The advantage of the beam over the surgeon's traditional knife is that the laser beam seals (cauterizes) blood vessels along the cut which minimizes bleeding and swelling.

e. **Joint replacements** — Uses metal and/or plastic artificial joints to replace joints lost to disease or injury

Information Sheet

f. **Arthroscopic surgery** — Uses an endoscope and/or attachments for some surgical procedures with fewer complications, less confinement time, and quicker recovery than traditional surgery

Note: Many promising discoveries and inventions are still in the developmental and/or research stages. These include artificial blood that can be used for emergency transfusions; advanced treatment for AIDS and cancer; and portable physical therapy units for those with spina bifida, cerebral palsy, and motor dysfunctions.

5. **Potential health hazards in the workplace created by technology**

a. **Mental hazards** — The need for increased productivity with technological equipment can result in worker stress, anxiety, depression, and stress-induced physical illnesses such as headaches.

b. **Equipment hazards** — Misuse or failure to use protective guards or gear can result in loss of sight, hearing, limb, or life.

c. **Material-handling hazards** — Improper lifting and moving of material can result in back or muscle injuries.

d. **Computer hazards** — Prolonged sitting, keyboarding, and viewing a computer screen can result in eye problems, carpal-tunnel syndrome (nerve damage in wrist), or low-level radiation exposure.

e. **"Sick" building hazards** — Poor air quality because of inadequate circulation and toxic fumes from building materials can result in many respiratory problems for workers in that building.

f. **Electromagnetic field (EMF) hazards** — Exposure to repeated or high levels of radio waves, X-rays, or infrared or ultraviolet light is possibly linked to a higher incidence of cancer.

Note: Almost all workplaces have some hazards created by technology. Although the technology devices or materials were used to make work easier or faster, they can also result in many new problems.

6. **Technological health advancements for the special needs population**

a. Motorized wheelchairs

b. Prosthesis devices

c. Computer networking for organ transplants, tissue matching

Information Sheet

d. Remote-controlled and voice-controlled computers which allow the impaired to be vocal or mobile

e. Advanced medical treatments such as those which allow kidney dialysis to be done at home

f. High-tech facilities which allow for better general care of individuals

7. **Ways technology has helped to improve an individual's wellness program**

a. **Physical**

(1) High-tech equipment for exercise, diagnostics, rehabilitation, and geriatric care

(2) Computer analysis of blood or food nutrition

(3) Computerized health appraisal with immediate feedback

(4) Advanced clothing design to address specific health needs such as new walking shoes or orthopedic supports

(5) Elimination of barriers to exercise such as indoor equipment to simulate outdoor activities and sports

b. **Mental and emotional**

(1) Safer, easier, and faster work-related responsibilities

Note: Technology gives an individual more leisure time for hobbies and sports which can help reduce stress.

(2) More efficient methods of communication between doctors, patients, and family members

Examples: Facsimile (Fax) machines, beepers, mobile phones, answering machines

Note: Improved communication helps to keep everyone informed and can reduce stress.

(3) More control over diseases and more hope for cures to illnesses and diseases

Information Sheet

8. **Current ethical issues related to technological advancements in health care**

    a. Who takes responsibility for connecting or disconnecting life-support systems?

    b. Who receives organ transplants?

    c. How is cosmetic surgery distinguished from reconstructive surgery?

    d. How has technology impacted on reproduction options?

    e. Are the results of the new treatments for diseases beneficial compared to the side effects produced?

    f. Who should pay for health care? Should care be denied if a person can't pay?

Individual and Family Health
Unit 4

Assignment Sheet 1—Evaluate Given Situations About Concerns with Organ Transplants

Name ______________________ Overall Rating __________

Evaluation criteria	**Rating**
Situations in Part A are ranked by priority	______
Reasons for rankings are clear and logical	______
Responses to Part B are clearly stated and logical	______

Introduction: Organ transplants provide many people with both a longer life and a better quality of life. Transplants have become commonplace due in part to advanced medical technology allowing for a higher success rate. Unfortunately, there are never enough compatible organs for all the patients needing transplants. This assignment will help you see how technology has helped to create the dilemmas involved in organ transplants, and how technology may be used to solve this problem.

Part A: Directions—The following individuals are candidates for a kidney transplant. Evaluate each situation and rank in order of which one should get the first kidney, second, and so on. In the space provided, explain why you ranked them in this order.

______ Teenage girl, age 15

______ Boy, age 9, born with kidney disease

______ Young mother, age 29 with three children

______ A male television talk-show host, age 57

1 — ______________________

2 — ______________________

3 — ______________________

4 — ______________________

Assignment Sheet 1

Part B: Directions—Respond to the following questions by writing a statement which represents your opinion in the space provided. Be prepared to defend your opinion during class discussion.

1. Do you see the present system for obtaining donated organs as successful? Why or why not? ______________________________

____

____

2. Due to the costs involved, do you feel the system is fair to people at all economic levels? ______________________________

____

____

3. Should private citizens pay for research to make transplant technology more available? Why or why not? ______________________________

____

____

4. How can new technological developments help to solve the situation so decisions such as those made in Part A would not be necessary? ______________________________

____

____

Individual and Family Health
Unit 4

Assignment Sheet 2—Evaluate Given Situations About Concerns with Medical Life Support

Name ____________________ Overall Rating __________

Evaluation criteria	Rating
Decisions are indicated	______
Rationales for decisions are logical	______
Responses to Part B questions are clear and logical	______

Introduction: The medical community deals with life and death situations every day. When dealing with whether or not to use life-support systems, there is often a conflict between the medical staff, the legal system, the family, and the patient. This assignment will help you see how difficult the decisions about life support can be.

Part A: Directions—After reading the situations below, decide who will remain on life-support systems. Indicate your decisions by circling yes or no. State your rationale of how you made that decision. Be prepared to discuss your decisions with the class.

Yes/No 1. A 5-year-old girl has taken an overdose of drugs obtained from a non-tamper-proof container. The child has been in a coma for eight weeks and is being fed intravenously (by IV bottle). Doctors are not sure if or when the child will regain consciousness.

Rationale for decision: ____________________

____

Yes/No 2. A 58-year-old woman has suffered from emphysema for many years. She is back in the hospital and is unconsciousness because of the lack of oxygen to her brain. Her lungs can no longer do their job, so she is on an artificial respirator.

Rationale for decision: ____________________

____

Assignment Sheet 2

Yes/No 3. A 16-year-old boy was involved in an automobile accident two days ago. He has multiple injuries with the most serious being the head injury. He is unconscious and is being fed intravenously. The latest tests show very little brain activity.

Rationale for decision: ______________________________

____

Yes/No 4. A 35-year-old woman has abused alcohol for many years. Her liver and kidneys have irreparable damage. While waiting for compatible donor organs, she has gone into a coma and is on life support. Her condition has deteriorated such that her doctors are not sure that new organs will save her.

Rationale for decision: ______________________________

____

Yes/No 5. A baby boy was born yesterday and only weighs 2 pounds. His lungs are severely underdeveloped. He is in the neonatal intensive care unit and is attached to many machines to help him breath. A minor birth defect in his heart was discovered today.

Rationale for decision: ______________________________

____

Part B: Directions—Answer the following questions in the blanks provided.

1. Who should make these decisions regarding life support?

____

____

____

2. Under what situations (if any) would you want to be kept alive by artificial life-support systems?

____

____

____

Assignment Sheet 2

3. If a person asks to be removed from life support or has a "living will" that states under what conditions that person agrees to life support, do you think the medical staff and the legal courts should follow the patient's wishes? Why or why not?

____

____

____

4. Do you think the issues of life support and "right to die" are legal or ethical issues?

Why? ____

____

____

____

5. Has technology improved the quality of life or simply prolonged it? Why?

____

____

____

Food and Nutrition
Unit 5

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss how technology has impacted on food and nutrition. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to food and nutrition with their correct definitions.
2. List new food products resulting from technology advancements.
3. Match food packaging technologies with their correct descriptions.
4. Complete statements concerning technologies and their applications for food and nutrition.
5. Match food additives with their correct uses.
6. Describe technological changes in large and small kitchen appliances.
7. Discuss ways that food and nutrition technology helps individuals with special needs.
8. Discuss future trends and changes that will influence the food and nutrition industry.
9. Identify food additives and their uses. (Assignment Sheet 1)
10. Evaluate given scenarios about how technology has changed the future related to food and nutrition. (Assignment Sheet 2)

Food and Nutrition
Unit 5

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.

2. Review Teaching Suggestions section that follows. Plan for classroom activities.

3. Plan for students with special needs.

4. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.

5. Develop teaching plan. Adjust for different learning styles.

6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.

8. Discuss the unit and specific objectives.

9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.

10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.

12. Make copies of the written test. Add or modify test items as needed.

13. Give written test.

14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.

15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Ask a local grocery store owner or manager to talk to the class. The owner/manager may discuss any or all of the following or may just answer questions written by students about the following:

    a. New food products available locally

    b. Which food products are produced locally and where the other foods come from

    c. Shopping habits and how they may have changed in the last ten years

    Guest speakers can help bring new, up-to-date information to the class and can help reinforce students' **communication skills, writing foundation skills,** and possible **career development** options.

2. Have students write menus of foods that are only produced locally. This could be done for each season. Discuss how technology has made almost all foods available year-round. This activity helps to localize the information in the unit and can reinforce **writing foundation skills, communication skills, creative thinking skills,** and **problem solving skills**.

3. Display examples of foods in new packaging. Have students discuss whether or not they are willing to pay more for these new packages. Firsthand exposure to new packages can reinforce **tactile learning skills** and the discussion about cost can reinforce **communication skills** and **problem solving skills**.

4. Discuss recycling efforts in your school and community. What types of food packages can be recycled? Recycling reinforces the importance of our actions on the global environment. The discussion can reinforce **communication skills**, and if the class decides to do something about recycling, that activity could reinforce **group effectiveness skills** and **influence skills**.

5. Discuss the technology used to make foods more convenient to consumers. This reinforces **communication skills**.

6. Show examples of convenience foods including ready-to-eat, ready-to-cook, and partially prepared foods. Have students evaluate each according to nutrition and cost. This could reinforce **problem solving skills**.

Suggested Activities

7. Ask students what percentage of their diet comes from convenience foods. Also ask them what percentage of their convenience food is "junk food" (high calorie, low nutrition food). Discuss the pros and cons of eating only junk foods. This reinforces **math foundation skills** and **problem solving skills**.

8. Have students identify the foods they obtain from vending machines. Are they junk foods? What healthy foods can also be found in vending machines? What new technology can be used on vending machines to make them ready for the future? This reinforces **communication skills** and **problem solving skills**.

9. Have students discuss the pros and cons of food additives. Survey the class to see if any students are allergic to food additives. This can reinforce **communication skills** and **problem solving skills**.

10. Take students on a field trip to a local appliance store to see new appliances and their special features. Pick up brochures if available. This can help you and your students stay up-to-date about new technology options and can reinforce **communication skills** and **group effectiveness skills**.

11. Discuss the new specialized small appliances such as bread makers and yogurt machines. Survey the class to see if anyone uses these at home. Discuss the pros and cons of these new appliances. This can reinforce **communication skills** and **problem solving skills**.

12. Survey the class to see if any students or their family members have special needs that need to be addressed by food and nutrition technology. Discuss the special foods that are required for some diets, as well as the needs of the elderly and disabled. This reinforces **communication skills** and **problem solving skills**, can increase awareness of special needs, and can help personalize this unit.

13. Discuss the food preparation and food shopping responsibilities for the different types of family structures such as single person, single parent, dual career, traditional, and extended family all living together. This can show the need for **teamwork** in a family and may increase **self-esteem** for students who have these family responsibilities.

14. In addition to Assignment Sheet 1, provide examples of actual food ingredient labels, and have students identify the food additives they find.

15. In addition to Assignment Sheet 2, have students discuss how they think the future will be. What foods will be invented? What new techniques or appliances will be used? How do they think farming and ranching may change? Futuring techniques increase **creative thinking** and **critical thinking skills**.

Suggested Activities

16. Discuss local food drives for the needy. Do students think these will be needed more or less in the future? Why? The class or FHA/HERO student organization may want to help the community in the next food drive. This activity can increase awareness of social problems and may make students want to help others in need. Participation may increase **self-esteem, motivation, interpersonal relations, teamwork,** and **influence skills**.

17. Show videotapes about new developments in food and nutrition and how technology impacts on food and nutrition. Refer to Suggested Supplemental Resources for ideas.

Resources Used in Developing This Unit

1. Hunter, Beatrice Trum. "Food for Thought: Convenience and Flavor--With Risks." *Consumers Research*, September 1988, pp. 8-9.

2. Hunter, Beatrice Trum. "Food for Thought: Edible Packaging." *Consumers Research.* November 1990, pp. 8-9.

3. Hunter, Beatrice Trum. "Food for Thought: Plastic Food and Beverage Packaging." *Consumers Research.* August 1990, pp. 8-9.

4. Hatfield, Densie. "The Food Additive Controversy." *Forecast for Home Economics.* September 1985, pp. 69-71.

5. "Commonly Used Additives and What They Do." *Food for Today Teacher's Resource Book.* Chapter 2, pp. 141-142.

6. Visser, Margaret. "A Meditation on the Microwave." *Psychology Today.* December 1989, pp. 38-42.

7. Sills-Levy, Ellen. "U.S. Food Trends Leading to the Year 2000." *Food Technology.* April 1989, pp. 128-132.

8. Riggers, Christine. "Nutrition Today: More Than Just Cooking." *What's New in Home Economics.* May/June 1991, pp. 20, 22.

9. Specchio, John J. "The Food Supply of the Future." *What's New in Home Economics.* May/June 1991, pp. 20, 22.

10. Edidin, Peter. "Eight Hot Trends of the 90s." *Psychology Today.* December 1989, p. 44.

11. "Biotechnology Blooms." *Food Engineering.* July 1989. pp. 51-55.

Suggested Activities

12. "Food Biotechnology." Scientific Status Summary by the Institute of Food Technologist. *Food Technology*. January 1988. pp. 133-134.

13. "Equipping the Modern Kitchen." *What's New in Home Economics.* September/October 1990. pp. 8-9.

14. "What's Happening with Small Appliances." *What's New in Home Economics.* January/February 1989, pp. 12-13.

15. Mayer, Caroline E. "Foods of the Future." *Consumers Research.* October 1990, pp. 27-29.

16. Inglett, George. "Oatrim Cuts Fat, Cholesterol in Ice Cream." *Science of Food and Agriculture.* July 1990, pp. 4-5.

17. Kapica, Cathy. "Simplesse . . . Now you can enjoy your ice cream without the guilt!" *What's New in Home Economics.* Vol. 23, No. 3, pp. 14-15.

18. Petrowski, Elaine Martin. "New Wave Cooking." *Home Mechanix.* April 1991. pp. 50-60.

19. Riell, Howard. "Home Delivery: On a Bumpy Course But Still Growing." *Supermarket Business.* May 1991. pp. 73-75, 82.

20. Litwak, David and Janet Torres Cepeda. "Shopping Habits: Has the Recession Hurt Supermarkets?" *Supermarket Business.* August 1991. pp. 55-62.

Suggested Supplemental Resources

1. *Kitchen Appliance Update* slide presentation and *Let's Make a Meal* teaching kit. Available from:

   Maytag Company
   Dept. 222YG
   Newton, IA 50208

2. *Food for the Future*, videotape filmed at Disney's Epcot Center. Looks at the scientific agricultural work being done at "The Land" exhibit. Available from:

   Modern Talking Picture Service, Inc.
   500 Park Street North
   St. Petersburg, FL 33709-9989
   813-541-5763

Suggested Activities

3. *Biotechnology Serving Human Needs*, videotape or slides looking at advances in biotechnology that have resulted in new drugs, new crops, and new foods. Available from:

   Industrial Biotechnology Association (IBA)
   1625 K Street, NW
   Suite 1100
   Washington, DC 20006
   202-857-0244

4. *You, Me, and Technology: Feeding the World*, videotape. Available from:

   Agency for Instructional Technology (AIT)
   Box A
   Bloomington, IN 47402
   800-457-4509 or 812-339-2203

5. *What's in the Food: Additives*, two sound filmstrips or filmstrips on video. Available from:

   The Learning Seed
   330 Telser Road
   Lake Zurich, IL 60047
   800-634-4941

Food and Nutrition
Unit 5

Answers to Assignment Sheets

Assignment Sheet 1

A. Any three of the following:

Additive	Uses
High fructose corn syrup	Sweetener
Citric acid, sodium citrate, monopotassium phosphate, sodium benzoate	Preservatives
Gum arabic	Stabilizer, thickener
Natural flavor	Flavor
Glycerol monostearate	Emulsifier
Yellow 5	Color

B. Any three of the following:

Additive	Uses
Corn syrup	Sweetener
Lecithin, mono- and diglycerides, polysorbate 60	Emulsifiers
Fumaric acid, calcium propionate, sorbic acid	Preservatives
Niacin, iron, thiamine mononitrate, riboflavin	Nutrients

C. Any three of the following:

Niacin, iron, thiamine mononitrate, riboflavin	Nutrients
Mono- and diglycerides	Emulsifiers
Corn sugar	Sweetener
Sodium caseinate	Binder, strengthener
BHA, BHT	Preservatives
MSG	Flavor enhancer
Tumeric extract	Color

Assignment Sheet 2—Answers will vary. Evaluate according to stated criteria.

Food and Nutrition
Unit 5

Answers to Written Test

1. a. 1
   b. 4
   c. 3
   d. 5
   e. 2

2. Any four of the following: (Students may give specific examples)

   a. Low fat, low cholesterol, and low salt products
   b. Egg substitutes
   c. Fat substitutes
   d. Sugar substitutes
   e. New milk products
   f. Processed meat products using chicken and turkey
   g. More choices for complex carbohydrates
   h. More varieties of fruits and vegetables
   i. More foreign food choices
   j. New drinks
   k. More gourmet foods
   l. New characteristics added through biotechnology and traditional breeding

3. a. 7
   b. 1
   c. 3
   d. 6
   e. 5

4. a. Biological
   b. Genetic engineering
   c. Detect contaminants in the food
   d. Plants
   e. Increasingly

5. a. 6
   b. 4
   c. 8
   d. 9
   e. 7
   f. 2
   g. 3
   h. 5

Answers to Written Test

6. Descriptions will vary but should include at least three changes in **both** large and small appliances from the following list:

   a. Large appliances are becoming more energy-efficient and have more electronic controls, optional features, and sizes.

      (1) Gas ranges have electronic pilots instead of standing gas pilots to save energy.
      (2) Some manufacturers offer combination ranges—gas/electric, microwave/convection, and conventional/convection.
      (3) Downdraft vents may be incorporated into ranges so overhead ventilation hoods are not needed.
      (4) Options on electric cooktops include halogen lights, electromagnetic coils, solid cast-iron discs, or coils sealed under glass.
      (5) Microwave ovens are becoming smaller, built-in, and even simpler to use.
      (6) Commerical appliances such as ranges may be down sized for residential use.

   b. Small appliances have more electronic controls and optional features and are becoming even smaller.

      (1) Cordless appliances are battery-operated and include electric knives and mixers.
      (2) Many small appliances can be installed under the counter or on the wall to free up counter space. These include coffeemakers, electric knives, can openers, blenders, toasters, and mixers.
      (3) Safety shut-offs and timers are included on some appliances such as coffeemakers.
      (4) Food processors are smaller and have variable speed controls so you can use slow speeds on delicate foods and high speeds on firm vegetables and meats.
      (5) Small speciality appliances include automatic melters/dispensers for pancake syrup or popcorn's "butter" topping, ice cream and yogurt machines, bread makers, pasta makers, salad vegetable slicers, and vegetable steamers.

7. Discussions will vary but should include the following:

   a. Elderly—More foods are being offered in smaller portions for their smaller appetites. These consumers need foods that are easy and safe to prepare in packages that are easy to open with easy to read preparation directions.
   b. Physically disabled—Technology should make it easier to design kitchens and appliances that are more accessible to the physically disabled. For the wheelchair-bound, counters and appliances need to be lower, aisles need to be wider, and more cabinet spaces need to be open below so the wheelchair can be rolled into the space.

Answers to Written Test

8. Discussions will vary but should include:

   a. Any one of the following:

      (1) More convenience foods such as fast foods, microwavable foods, take-out foods, or home deliveries
      (2) More healthy, nutritious foods such as foods with less cholesterol and fat, less sugar and salt, more fruits and vegetables, fiber, and unprocessed grains
      (3) More "organically grown" foods such as fruits, vegetables, and grains grown with a limited use of pesticides
      (4) More high quality foods such as fresh, good tasting, and eye-appealing foods
      (5) More ethnic foods such as Mexican, Italian, French, German, Chinese, Caribbean, Russian, and more oriental foods

   b. Any one of the following:

      (1) Older population—More nutritious foods in smaller quantities
      (2) Single-person households—Individually packaged and convenient foods
      (3) Working women

         (a) Convenience foods
         (b) More men and children shopping and preparing meals
         (c) More shopping conveniences offered through supermarkets

Food and Nutrition
Unit 5

Written Test

Name ______________________ Score __________

1. Match the terms on the right with the correct definitions.

______a. Free from disease-causing microorganisms

______b. Statistical study of human populations according to their sizes, ages, incomes, and distributions

______c. Products where prepreparation and processing is done to shorten the time needed to prepare, cook, and serve them

______d. Any substance added to food to improve appearance, texture, flavor, storage, or nutritional content

______e. Substance occurring in animal cells and body fluids that, when excessive, can block arteries and lead to heart attacks and strokes

1. Aseptic
2. Cholesterol
3. Convenience foods
4. Demographics
5. Food additive
6. Irradiation

2. List four new food products resulting from technology advancements.

a. ______________________

b. ______________________

c. ______________________

d. ______________________

Written Test

3. Match food packaging technologies on the right with their correct descriptions.

______a. Extra seals are placed inside or outside of jars and bottles so consumer will know that product has not been opened

______b. Extend the shelf life and require no refrigeration

______c. Films, coatings, and pouches that seal and contain foods

______d. Low doses may be used to inhibit growth of microorganisms and extend shelf lives of both refrigerated and unrefrigerated foods

______e. Contain foods that are sealed in packages in which the oxygen has been partially or totally replaced with inert gases (carbon dioxide and/or nitrogen) to extend shelf life

1. Aseptic packaging
2. Biodegradable and recyclable packaging
3. Edible packaging
4. Microwavable and dual-ovenable packaging
5. Modified-atmosphere packaging and controlled-atmosphere packaging
6. Post-packaging irradiation
7. Tamper-evident packaging

4. Complete statements concerning technologies and their applications for food and nutrition by circling the correct words.

a. Biotechnology involves the use of (chemical, biological) organisms to make commercial products.

b. New discoveries about DNA have enabled scientists to rearrange genes very precisely to create and alter food products and processes. This new technology is called (genetic engineering, genetic counseling).

c. Biotechnology is used in food safety to develop improved packaging methods and new ways to (detect contaminants in the food, grow herbicide-resistant plants).

d. A new agriculture technology method called hydroponics involves producing (fish, plants) in environmentally-controlled enclosures.

e. Computers are used (increasingly, decreasingly) for transporting and handling food products.

Written Test

5. Match food additives on the right with their correct uses.

______a. Help food to retain moisture.

______b. Add flavor to foods. May be natural or synthetic.

______c. Extend storage time and prevent spoilage and prevent the growth of bacteria, molds, and fungi.

______d. Improve body, consistency, and texture. Many are natural carbohydrates.

______e. Improve nutritional value and/or replace nutrients that are lost in processing.

______f. Increase consumer appeal. May not be used excessively or to cover up an unwholesome food. May be natural or synthetic.

______g. Help distribute tiny particles of one liquid into another to prevent separation. Improve uniformity, consistency, stability, and texture.

______h. Improve the natural flavor of foods without actually adding any flavor of their own.

1. Binders, strengtheners
2. Colors
3. Emulsifiers
4. Flavor ingredients
5. Flavor enhancers
6. Humectants
7. Nutrients
8. Preservatives
9. Stabilizers, thickeners
10. Sweeteners

6. Describe at least three technological changes in large and small kitchen appliances.

a. Large appliances

(1) ______________________________

(2) ______________________________

(3) ______________________________

b. Small appliances

(1) ______________________________

(2) ______________________________

(3) ______________________________

Written Test

7. Discuss ways that food and nutrition technology helps the following individuals with special needs.

   a. Elderly — ______________________________

   ____

   ____

   b. Physically disabled — ______________________________

   ____

   ____

8. Discuss future trends and changes that will influence the food and nutrition industry.

   a. One food trend for the future is that consumers want more ______________

   foods such as ______________________________

   ____

   b. One example of a changing family structure or lifestyle is ______________.

   The food and nutrition industry will address this group by offering ______________

   ______________________________.

Food and Nutrition
Unit 5

Unit Evaluation Form

Student Name ______________________________ Unit Rating __________

Assignment Sheet 1—Identify Food Additives and Their Uses Rating ______

Comments: ____

____

Assignment Sheet 2—Evaluate Given Scenarios About How Technology Has Changed the Future Related to Food and Nutrition Rating ______

Comments: ____

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________________ Date __________

Student Signature ______________________________ Date __________

***Permission to duplicate this form is granted.**

Food and Nutrition
Unit 5

Information Sheet

1. **Terms and definitions**

   a. **Aseptic** — Free from disease-causing microorganisms (pathogens)

   b. **Cholesterol** — Substance occurring in animal cells and body fluids that, when excessive, can block arteries and lead to heart attacks and strokes

   c. **Convenience foods** — Products where prepreparation and processing is done to shorten the time needed to prepare, cook and serve them

   d. **Demographics** — Statistical study of human populations according to their sizes, ages, incomes, and distributions

   e. **Food additive** — Any substance added to food to improve appearance, texture, flavor, storage, or nutritional content

   f. **Irradiation** — Exposure to radiation (as X rays or alpha rays)

2. **New food products resulting from technology advancements**

   a. **Low fat, low cholesterol, and low salt products**—Traditional foods (especially entrees and soups) have been redesigned or reformulated to make them more appealing to health-conscious consumers.

   b. **Egg substitutes**—Refrigerated or frozen liquid egg products consisting of egg whites and no egg yolks or cholesterol

   c. **Fat substitutes**—Include Simplesse® and Oatrim® that can be used in frozen desserts to reduce fat content and calories and non-stick cooking sprays so oils are not needed

   d. **Sugar substitutes**—Include Nutrasweet® and Isomalt® that can replace sucrose to prevent tooth decay and cut calories

   e. **New milk products**—Include low-fat frozen concentrated milk products (made from nonfat dry milk, water, and cholesterol-free oils); carbonated milk (flavored or plain) like soda pop; imitation cheeses; and low-fat, low calorie cheese foods

   f. **Processed meat products using chicken and turkey** instead of beef or pork such as turkey ham, bacon, sausage, and hot dogs

Information Sheet

g. **More choices for complex carbohydrates** with high fiber such as psyllium; whole wheat, oat, and rice brans; buckwheat; bulgur; amaranth; and vegetable pastas using spinach and carrots

h. **More varieties of fruits and vegetables** from around the world such as bok choy, shiitaki mushrooms, kiwi fruit, and pomegranates

i. **More foreign food choices** such as sesame oil, Chinese mustard, tofu, pesto, and Mexican fajita marinades

j. **New drinks** including caffeine-free colas, sport drinks, juice-added sodas, sparkling mineral water beverages, and low-calorie beers and wines

k. **More gourmet foods** such as imported cheeses, wines, and chocolates; fancy sauces and desserts; and exotic flavors of ice cream

l. **New characteristics added through biotechnology and traditional breeding**—Animals and plants are being modified to produce low-cholesterol eggs, low-fat beef, high-gluten wheat, high-protein corn, and single-serving size melons.

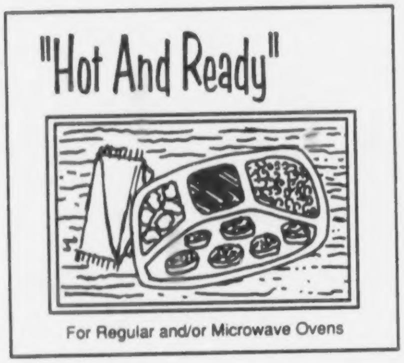
3. Food packaging technologies

a. **Microwavable and dual-ovenable packaging**—Contain foods that can be heated in microwave and/or conventional ovens.

(1) Consumers also want this packaging to be table-ready, easy to open, easy to eat from, unbreakable, reclosable, tamper-evident, convenient, protective of food quality, safe, recyclable, and no more expensive than other packaging (metal or glass).

(2) Food companies and plastic manufacturing firms continue to research ways to improve technology so all of these characteristics can be provided to consumers.

Figure 1


"Hot And Ready"
For Regular and/or Microwave Ovens

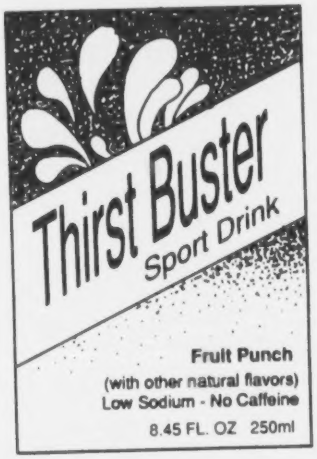
Information Sheet

b. **Aseptic packaging**

(1) Extend the shelf life and require **no** refrigeration.

(2) Commonly used for single-serving sizes of juice, milk, sauces, soups, and entrees such as chili and beans.

Figure 2

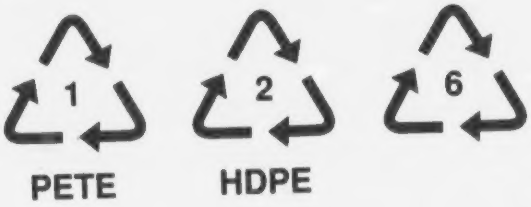

Thirst Buster
Sport Drink
Fruit Punch
(with other natural flavors)
Low Sodium - No Caffeine
8.45 FL. OZ 250ml

c. **Biodegradable and recyclable packaging**

(1) Biodegradable packages are designed to be broken down by microorganisms over a period of several weeks to many years. New technology is trying to shorten the length of this process.

(2) Recyclable packages include glass bottles and jars, metal cans, aluminum cans, and some plastic products. New technology for recycling is improving both collection and reuse of materials. Many new plastic products have code numbers molded into the container to assist in recycling.

Figure 3

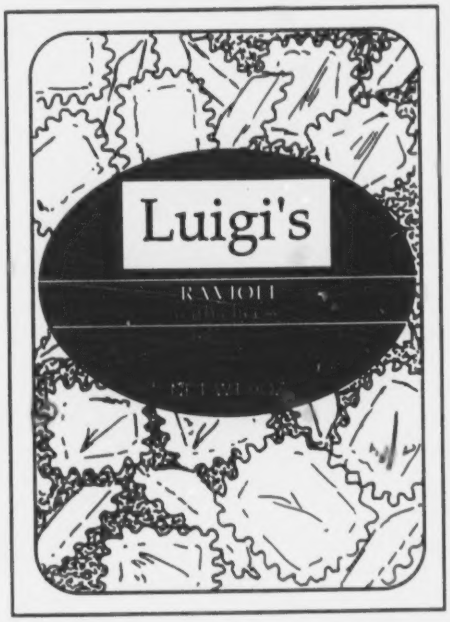

1
PETE
2
HDPE
6

d. **Modified-atmosphere packaging (MAP) and controlled-atmosphere packaging (CAP)**

(1) Contain foods that are sealed in packages in which the oxygen has been partially or totally replaced with inert gases (carbon dioxide and/or nitrogen) to extend shelf life.

(2) Commonly used for "fresh-refrigerated" entrees and salads, meat and seafood packaging, pre-cut salad vegetables at restaurants, some bakery products, and shelf-stable entrees intended for home microwaves.

Figure 4



e. **Edible packaging**

(1) Packaging in the forms of films, coatings, and pouches that seal and contain foods.

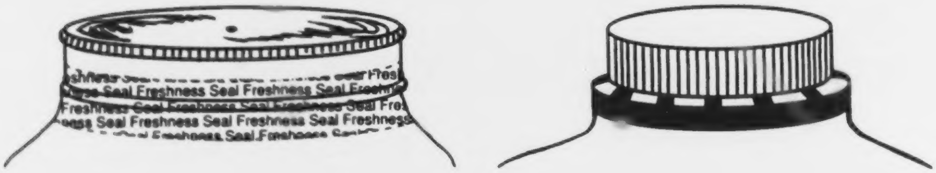
(2) Advantages include reduced waste disposal (no packages to discard) and extended shelf lives for certain foods by keeping microorganisms out and moisture in.

(3) May be used on refrigerated red meats, bakery products, frozen foods, produce, candies, cereals, nuts, and dried fruits.

Information Sheet

f. **Tamper-evident packaging**—Extra seals are placed inside or outside of jars and bottles so consumer will know that product has not been tampered with.

Figure 5


Freshness Seal Freshness Seal Freshness Seal

g. **Post-packaging irradiation**

(1) Low doses of irradiation may be used to inhibit growth of microorganisms and extend shelf lives of both refrigerated and unrefrigerated foods including fruits, vegetables, spices, seasonings, and pork.

(2) Current public resistance to irradiated products has prevented this technology from being used more.

4. Technologies and their applications for food and nutrition

a. **Biotechnology**

(1) Biotechnology involves the use of biological (living) organisms to make commercial products.

(2) Biotechnology as defined above has been used for hundreds of years in the making of breads, wines, and cheeses.

Note: Microorganisms such as yeasts and bacteria are used in these processes.

(3) New discoveries about DNA (deoxyribonucleic acid) have enabled scientists to rearrange genes very precisely to create and alter food products and processes. This new technology is called genetic engineering.

Information Sheet

(4) Current research in food biotechnology is in agriculture, food processing, and food safety.

(a) Biotechnology in agriculture involves identifying genes with desirable traits and moving them from one plant or animal to another. Desirable traits include herbicide-resistance, disease-resistance, drought-resistance, and characteristics such as better nutrition and yield.

(b) Biotechnology in food processing involves developing food products that have improved taste, texture, shelf-life, and processing characteristics. It also involves improving the processes of fermentation and preservation.

(c) Biotechnology in food safety involves developing improved packaging methods and new ways to detect contaminants in the food.

b. **Agriculture technology**

(1) New production methods used in agriculture include hydroponics and aquaculture.

(a) Hydroponics is producing plants in year-round, environmentally-controlled, soilless enclosures.

(b) Aquaculture is producing large quantities of fish and shellfish in environmentally-controlled enclosures.

(2) Combinations of traditional breeding with biotechnology allow agriculture to more efficiently produce the types and quantities of plants and animals desired by consumers.

c. **Robotics technology**

(1) Robots are used in food production, processing, and packaging.

(2) Robots can also be used in cooking, assembling, and wrapping fast foods.

d. **Medical technology**—New discoveries about human health needs and the relationship between food and health impacts on the types of food products offered to consumers.

Information Sheet

e. **Transportation and handling technology**

(1) Computers are used increasingly for transporting and handling food products.

(a) Computers on modern refrigerated trucks help in scheduling deliveries.

(b) Computers are used for ordering merchandise and for keeping accounting and inventory records.

(2) Powered fork lifts and conveyors are used to move large quantities of food products with reduced handling time.

(3) Scanners at retail check-outs provide information for ordering and accounting of food products.

5. Food additives and their uses

Note: Food additives are created by technology and have increased the nutritional content, availability, convenience, and appeal of many foods.

FOOD ADDITIVES	USES
a. **Binders, strengtheners** Calcium caseinate, sodium caseinate, soy protein isolate	Aid in binding ingredients together and improve the texture of baked products. Come from milk, soybeans, or wheat.
b. **Colors** FD&C blue No. 1, FD&C red No. 2, 3, 40, FD&C yellow No. 3, 5, annatto extract, caramel, beta carotene, carrot oil, paprika, saffron, tumeric extract	Increase consumer appeal. May not be used excessively or to cover up an unwholesome food. May be natural or synthetic.
c. **Emulsifiers** Lecithin, mono- and diglycerides, glycerol monosterate, sodium lauryl sulfate, polysorbate 60, carrageenan	Help distribute tiny particles of one liquid into another to prevent separation. Improve uniformity, consistency, stability, and texture.
d. **Flavor ingredients** Vanilla, vanillin, spices, seasonings, autolyzed yeast, malic acid	Add flavor to foods. May be natural or synthetic.

Information Sheet

FOOD ADDITIVES	USES
e. **Flavor enhancers** Monosodium glutamate (MSG), hydrolyzed plant protein, disodium inosinate	Improve the natural flavor of foods without actually adding any flavor of their own.
f. **Humectants** Glycerine, sorbitol, glycerol monostearate, propylene glycol	Help food to retain moisture.
g. **Nutrients** Ascorbic acid, calcium caseinate, iron, niacin, thiamine mononitrate, vitamins	Improve nutritional value and/or replace nutrients that are lost in processing.
h. **Preservatives** BHA, BHT, benzoic acid, calcium acetate, calcium propionate, citric acid, fumaric acid, monopotassium phosphate, potassium sorbate, sodium benzoate, sodium citrate, sorbic acid	Extend storage time and prevent spoilage and prevent the growth of bacteria, molds, and fungi.
i. **Stabilizers, thickeners** Alginates, carrageenan, dextrin, gelatin, modified food starch, pectin, various vegetable gums (guar, locust bean, arabic)	Improve body, consistency, and texture. Many are natural carbohydrates.
j. **Sweeteners** Aspartame, corn syrup, dextrose, glucose, high fructose corn syrup, mannitol, sodium saccharin, sorbitol, sucrose	Make aroma or taste of food more agreeable or pleasurable.

6. Technological changes in kitchen appliances

a. **Large appliances** are becoming more energy-efficient and have more electronic controls, optional features, and sizes.

(1) Gas ranges have electronic pilots instead of standing gas pilots to save energy.

(2) Some manufacturers offer combination ranges—gas/electric, microwave/convection, and conventional/convection.

(3) Downdraft vents may be incorporated into ranges so overhead ventilation hoods are not needed.

Information Sheet

(4) Options on electric cooktops include halogen lights, electromagnetic coils, solid cast-iron discs, or coils sealed under glass.

(5) Microwaves ovens are becoming smaller, built-in, and even simpler to use.

(6) Commercial appliances such as ranges may be downsized for residential use.

b. **Small appliances** have more electronic controls and optional features and are becoming even smaller.

(1) Cordless appliances are battery-operated and include electric knives and mixers.

(2) Many small appliances can be installed under the counter or on the wall to free up counter space. These include coffeemakers, electric knives, can openers, blenders, toasters, and mixers.

(3) Safety shut-offs and timers are included on some appliances such as coffeemakers.

(4) Food processors are smaller and have variable speed controls so you can use slow speeds on delicate foods (such as mushrooms or fruits) and high speeds on meats and firm vegetables (such as carrots or onions).

(5) Small specialty appliances include automatic melters/dispensers for pancake syrup or popcorn's "butter" topping, ice cream and yogurt machines, bread makers, pasta makers, salad vegetable slicers, and vegetable steamers.

7. Ways that food and nutrition technology helps individuals with special needs

a. Individuals on special diets

(1) More foods are being offered that are low cholesterol, low fat, low calorie, low sodium, high fiber, or free of various ingredients that some people need to avoid.

(2) These foods serve the special needs of the elderly, very young, and patients with medical problems such as heart disease, diabetes, high blood pressure, and special food allergies.

Information Sheet

b. **Children, elderly, and mentally disabled**

  (1) These special populations have similar needs for foods that are easy and safe to prepare.

  (2) Food packages need to be easy to open with easy to read preparation directions.

  (3) Smaller portions are commonly needed by children and the elderly.

  (4) Appliances that address the special safety needs of this group include microwave ovens and hot water dispensers to safeguard against fires and scaldings.

c. **Physically disabled**

  (1) Technology should make it easier to design kitchens and appliances that are more accessible to the physically disabled.

  (2) For the wheelchair-bound, counters and appliances need to be lower, aisles need to be wider, and more cabinet spaces need to be open below so the wheelchair can be rolled into the space.

8. Future trends and changes that will influence the food and nutrition industry

a. **Future food trends**

  (1) **More convenience foods**—Consumers want foods that are **fast**—fast to prepare and fast to eat. Many people think of fast foods as those that are ready in minutes, even seconds. This trend is shown in increased sales of microwaves and microwavable foods, as well as more take-out foods and home deliveries.

  (2) **More healthy, nutritious foods**—Consumers want more informative product labeling and foods with less cholesterol and fat, less sugar and salt, and more fruits and vegetables, fiber, and unprocessed grains.

  (3) **More "organically grown" foods**—Consumers want fruits, vegetables, and grains that have been grown with a limited use of pesticides.

  (4) **More high quality foods**—Consumers want foods that are fresh, good tasting, and eye-appealing. At the same time, consumers demand low prices for staples but are willing to pay more for novelty items.

  (5) **More ethnic foods**—Minority populations are growing in size and are influencing the diversity of market choices. Mexican, Italian, French, German, Chinese, Caribbean, Russian, and more oriental cuisines are offered.

Information Sheet

b. **Changing family structures, lifestyles, and demographics**

(1) **Increased older population**

Note: Between 1985 and the year 2000, the Census Bureau predicts the 18-35 age group will decrease by 14%, the 35-50 age group will increase by 40%, and the over-50 age group will increase by 23%.

(a) Fewer foods will be targeted to youth groups, and more foods will be offered to the older population.

(b) Foods for this group must be more nutritious, in smaller quantities.

(2) **More single-person households**—Foods for this group must be individually packaged and convenient.

Note: By the year 2000, this segment is predicted to be one-third of all U.S. households.

(3) **More women in the work force**

Note: It is estimated that 84% of all women between the ages of 35 and 44 will be in the work force by the year 2000.

(a) Convenience foods are a high priority for this group.

(b) More men and children are shopping and preparing meals for the family, or individual family members are preparing their own meals.

(c) More shopping conveniences are offered through supermarkets to this group including home delivery; shopping by computer, phone, or fax; child care while shopping; and numerous non-food departments for one-stop shopping.

Food and Nutrition
Unit 5

Assignment Sheet 1—Identify Food Additives and Their Uses

Name ______________________________ Overall Rating __________

Evaluation criteria	Rating
Food additives are correctly identified	______
Uses are correctly stated	______

Introduction: Many consumers read food labels to identify additives. Some reasons to identify additives are to improve nutrition in one's diet, to avoid additives that cause allergic reactions, or to determine wholesomeness of a food. Reading labels helps consumers make informed decisions.

Directions: Identify three food additives in the following food ingredient labels. State why those additives were used. Refer to Objective 5 in the Information Sheet for help.

A. Ingredients: Water, high fructose corn syrup, citric acid, salt, sodium citrate, gum arabic, monopotassium phosphate, sodium benzoate, natural flavor, glycerol monostearate, brominated vegetable oil, yellow 5.

	Additive	Uses
1.	____________	____________
2.	____________	____________
3.	____________	____________

B. Ingredients: Unbleached wheat flour, water, corn syrup, yeast, contains 2% or less of each of the following: baking powder, baking soda, corn flour, corn meal, corn starch, salt, distilled vinegar, wheat gluten, partially hydrogenated soybean oil, lecithin, whey, fumaric acid, malted barley flour, mono- and diglycerides, polysorbate 60, calcium propionate, sorbic acid, niacin, iron, thiamine mononitrate, riboflavin

	Additive	Uses
1.	____________	____________
2.	____________	____________
3.	____________	____________

Assignment Sheet 1

C. Ingredients: Enriched bleached flour (niacin, iron, thiamine mononitrate, riboflavin), vegetable shortening (partially hydrogenated soybean oil and hydrogenated cottonseed oil, with mono- and diglycerides added), yellow corn flour, rye flour, corn sugar, sodium bicarbonate, salt, sodium caseinate, BHA, BHT, MSG, nonfat dry milk, malted barley flour, tumeric extract

	Additive	Uses
1.	____________________	____________________
2.	____________________	____________________
3.	____________________	____________________

Food and Nutrition
Unit 5

Assignment Sheet 2—Evaluate Given Scenarios About How Technology Has Changed the Future Related to Food and Nutrition

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Advantages and disadvantages are appropriate	______
All responses are well-written and logical	______

Introduction: Technology is reaching into the kitchen and changing the way many of us prepare our food. Even more changes can be anticipated for the future. This assignment gives you the opportunity to analyze changes that may happen in the future.

Directions: Read the following scenarios, and discuss the advantages and disadvantages that you would see if each situation actually happens. Then state your conclusion of the situation, and why.

A. In the year 2025, the only cooking appliance commonly used in the home is the microwave oven. This means that all family members can eat different meals at different times. The traditional "family meal" where everyone eats together is gone.

1. Advantages— ____

   ____

2. Disadvantages— ____

   ____

3. Conclusion—I think this situation would be ________________ because

   ____

Assignment Sheet 2

B. In the year 2050, all food is prepared by professionals and must be consumed outside of the home in restaurants, cafeterias, or designated eating areas. Food cannot be prepared or eaten at home. Therefore, kitchens and all of their appliances are no longer needed in the home. New homes are being built without kitchens.

1. Advantages—____

   ____

2. Disadvantages—____

   ____

3. Conclusion—I think this situation would be ________________ because

   ____

C. In the year 2075, all nourishment is consumed in the forms of pills or shots. No food (plant or animal products) is eaten. However, water is still necessary.

1. Advantages—____

   ____

2. Disadvantages—____

   ____

3. Conclusion—I think this situation would be ________________ because

   ____

Consumer Education
Unit 6

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss how technology has impacted on consumer education. The students should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to consumer education technology with their correct definitions.
2. List ways technology affects consumer products.
3. Explain how technology has increased and decreased the cost of consumer products.
4. List examples of obsolete consumer products.
5. Match technology devices or services with their uses for consumer shopping.
6. Distinguish between ways technology has impacted on consumer finances.
7. State possible technology solutions to environmental problems.
8. Select true statements concerning the impact of technology on the U.S. and world economy.
9. Evaluate features of new products. (Assignment Sheet 1)
10. Identify recycling efforts in your community. (Assignment Sheet 2)
11. Research origins of consumer products. (Assignment Sheet 3)
12. Design a product or service for the future. (Assignment Sheet 4)

Consumer Education
Unit 6

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives.
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Give written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Discuss how technology has changed the products available to consumers. Have students list the items that they have purchased in the last month. Compile the list on the chalkboard, and then have them identify what percentage of the products are "new." (Students can define "new.") This activity can help to reinforce **communication skills, group effectiveness skills,** and **math foundation skills**.

2. Discuss how technology has changed shopping. Have students identify the new technology available to make purchasing easier. Where have students seen this technology in action in their community? Then have students discuss the advantages and disadvantages of these new devices or services. This can reinforce **communication skills, group effectiveness skills,** and **problem solving skills**.

3. Make a display of consumer items that have become obsolete, primarily because of technology. Start early on this display. You may have to search attics or garages to find examples. Students should be able to help in gathering these products. Objective 4 gives several examples. Students may provide many other examples. This activity can reinforce **group effectiveness skills** and **creative thinking skills**.

4. Have students discuss what has replaced the products on display. These new products could also be displayed. Students could arrange the display to show the contrasts between the new products and the old products. Have students discuss whether or not they think the new products are better. This reinforces **group effectiveness skills** and **critical and creative thinking skills.**

5. Have students collect articles from newspapers or magazines dealing with technology and its impact on consumers. Display articles on a bulletin board, and talk about how they are related to the objectives of this unit. Extra credit may be given for students making this extra effort. Additional points may be given if students will give an oral report on their article. Discuss with students that reading current literature is the primary way that people stay up-to-date on technology. Encouraging students to read and find new information on their own reinforces their **learning skills** and **reading foundation skills**. Organizing and giving oral reports reinforce **communication skills** and **reading and writing foundation skills**.

6. Invite a financial loan officer to speak to the class about new technology in banking. This activity can reinforce Objective 5. Have students prepare questions beforehand that they can ask the guest speaker. Preparing and asking questions helps to reinforce their **writing foundation skills** and **communication skills**.

Suggested Activities

7. Discuss state and local environmental problems. Discuss how technology can both create environmental problems, as well as help to solve these same problems. For example, automobiles create air pollution, but air filters and catalytic converters created by technology help to solve these problems. Discussing local problems and then brainstorming for answers helps students to see that these problems are their problems. Discussions help to reinforce **communication skills, creative and critical thinking skills,** and **group effectiveness skills**.

8. Have students discuss whether or not they think that consumers have an obligation to protect the environment. Do they recycle? Do they buy recycled products? Do they buy disposable products? How can their generation solve the environmental problems of today and the future? These discussions (and debates) reinforce **communication skills, creative and critical thinking skills,** and **group effectiveness skills**.

9. Discuss how students could begin or become involved in an existing recycling project at the local school. This activity can reinforce **group effectiveness skills**, and can also improve students' **self-esteem** because they will feel that they are doing something for the environment and their future world.

10. For Assignment Sheet 1, you could divide the class into four groups and only assign one product to each group. This would save time and can also help to reinforce **teamwork**. Products that the students analyze could also be displayed in the classroom. This activity helps to keep the curriculum current and interesting to the students.

11. For Assignment Sheet 2, you may wish to provide students with the information about what each recycling center will collect and the prices they will pay. To reinforce this activity you may want to show examples of the types of products that can be recycled (glass, plastic, etc.) You could also have students sort through a sack of trash and determine what could be recycled and what would have to go to the landfill. This reinforces **problem solving skills**.

12. For Assignment Sheet 3, use a globe of the world to point out the origins of the consumer products identified by the students. Students may find out that coffee comes from Brazil, but they still may not know where Brazil is. Students could also use the globe to speculate on how their products reached them (truck, ship, train, plane). This reinforces the idea of globalization and can also be a geography review.

13. For Assignment Sheet 4, you could have a contest for the most creative new product or service of the future. Students could be the judges, or you may want to involve community leaders as judges. This activity encourages **creative thinking**, can improve **motivation**, and bring recognition to your program.

Suggested Activities

Resources Used in Developing This Unit

1. *Creative Living: Basic Concepts in Home Economics*, 4th ed. Mission Hills, CA: Glencoe Publishing Company, 1990.
2. "Words to Watch." *U.S. News and World Report*, December 31, 1990/January 7, 1991. pp. 84-85.
3. Mayer, Martin. "Scanning the Future." *Forbes*, October 15, 1990. pp. 114-117.
4. *Adult and Family Living*. Stillwater, OK: Oklahoma Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1990.
5. *Foundations for Living II*. Stillwater, OK: Oklahoma Department of Vocational and Technical Education, Curriculum and Instructional Materials Center, 1991.
6. "Advertising and Mass Marketing: The Threat and the Promise." *Futurist*. May/June, 1990. pp. 39-40.
7. *Life Management*. Englewood, NJ: Prentice-Hall, Inc., 1990.
8. *Life Plans*, 2nd ed. Cincinnati, OH: Southwestern Publishing Company, 1990.
9. *1990 Census: Today's Technology for Tomorrow's Business: A Supplement to American Demographics*. CACI Marketing Systems, 1990.

Suggested Supplemental Resources

In order to keep current with new technological developments related to home economics, it is suggested that the teacher begin a file on new developments to supplement the units developed in this curriculum.

Many national magazines and newspapers including *The Wall Street Journal*, *Newsweek*, *Time*, and *U.S. News and World Report* carry articles relating to new technology developments. Professional home economics publications are also a good source of new developments.

Consumer Education
Unit 6

Answers to Written Test

1. a.	2	e.	11
b.	9	f.	10
c.	4	g.	6
d.	8		

2. Any three of the following:

    a. Cost
    b. Choices
    c. Availability
    d. Desirability
    e. Accessibility

3. a. Increasing cost
    (1) Reasons may be one of the following: (Students' answers may vary)
        (a) Higher research and development costs
        (b) Optional features or equipment added to basic items
        (c) Increased safety features required by consumers or the government

    (2) Examples may be one of the following: (Students' answers may vary)
        (a) Automobiles
        (b) Home appliances
        (c) Home accessories
        (d) Televisions

    b. Decreasing cost
    (1) Reasons may be one of the following: (Students' answers may vary)
        (a) Foreign production with reduced labor costs
        (b) New inventions and discoveries that are cheaper
        (c) More efficient production and delivery techniques

    (2) Examples may be one of the following: (Students' answers may vary)
        (a) Foreign made clothing
        (b) Many out-of-season or foreign foods
        (c) Computers
        (d) Calculators

Answers to Written Test

4. Any three of the following: (Students may give many other good examples)

   a. LP records and record players
   b. 8-track tapes and tape players
   c. Black and white televisions
   d. Clothing fads
   e. Polyester double knits
   f. Treadle sewing machines
   g. Adding machines
   h. Manual cash registers
   i. Manual typewriters
   j. Coffee percolators
   k. Wind-up alarm clocks

5. a. 3
   b. 1
   c. 5
   d. 2

6. a. CC
   b. EFT

7. a. Any two of the following:

      (1) More energy-efficient vehicles
      (2) Mass transportation
      (3) More efficient conversion of fuels to energy with fewer harmful emissions
      (4) More use of alternative energies such as solar and wind

   b. Any two of the following:

      (1) Improved landfills with better liners and groundwater monitoring devices
      (2) New incinerators with advanced combustion systems and state-of-the-art air pollution controls
      (3) Improved collection and processing of recycled glass, paper, plastic, aluminum, scrap metals, wood, and motor oils
      (4) More products made from recycled materials
      (5) Fewer products that are disposable or over-packaged

8. a. F
   b. T
   c. F
   d. T
   e. T

Consumer Education
Unit 6

Written Test

Name ______________________________ Score ______________

1. Match the terms on the right with the correct definitions.

_____a. A person who buys goods and services

_____b. Transforming waste products into new products

_____c. The ability to produce a desired effect without excess waste of resources

_____d. A reduction in the quality of the environment by the introduction of impurities

_____e. Useless, unwanted, or discarded material

_____f. A combination of smoke and fog forming an atmosphere polluted with industrial emissions and automobile exhaust

_____g. Hydrocarbon compounds derived from the remains of organisms buried millions of years ago

1. Acid rain
2. Consumer
3. Emission
4. Energy efficient
5. Environment
6. Fossil fuels
7. Personal identification number
8. Pollution
9. Recycling
10. Smog
11. Waste

2. List three ways that technology affects consumer products.

a. ____

b. ____

c. ____

Written Test

3. Explain how technology has increased and decreased the cost of consumer products.

   a. Give one reason and one example of technology **increasing** the cost of a product.

      (1) Reason: ____________________

      ____

      (2) Example: ____________________

      ____

   b. Give one reason and one example of technology **decreasing** the cost of a product.

      (1) Reason: ____________________

      ____

      (2) Example: ____________________

      ____

4. List three examples of obsolete consumer products.

   a. ____________________

   b. ____________________

   c. ____________________

Written Test

5. Match the technology devices or services on the right with the correct uses for consumer shopping.

______a. Allows the consumer to shop and buy products without having to leave home; products may be advertised through catalogs or cable television

______b. Used to keep records of cash and charge sales by departments; may also track inventories

______c. Attach to clothing items or packages; must be removed by clerks at point of sale

______d. Used to read the universal bar code on packages or labels; speeds up the checking out process

1. Electronic cash registers
2. Electronic scanners
3. Home shopping
4. Motorized shopping vehicles
5. Shopping prevention tags

6. Distinguish between ways technology has impacted on consumer finances by placing a "CC" next to the description of credit cards and an "EFT" next to the description of electronic funds transfer.

______a. Allow consumers to make purchases conveniently without having to carry cash; fees and interest are charged for this privilege to pay at a later date

______b. Allow consumers to pay bills or transfer money between accounts through the use of a computer accessed to the bank's computer

7. State two possible technology solutions to the environmental problems listed below.

Environmental Problems	Possible Technology Solutions
a. Air and water pollution, acid rain, and smog	(1) ______________________ ______________________ (2) ______________________
b. Excess waste and inadequate waste disposal	(1) ______________________ ______________________ (2) ______________________

Written Test

8. Select true statements concerning the impact of technology on the U.S. and world economy by placing a "T" or "F" next to the true or false statements.

______a. The movement of products, capital, technology, information, and ideas around the world is decreasing.

______b. Many U.S. companies are buying foreign companies; many foreign companies are buying U.S. companies.

______c. As countries become more intertwined economically, they also become more independent of each other.

______d. Consumers are also experiencing more of the world through increased travel, imported products, immigration of populations, international relief and environmental organizations, and the media.

______e. In a free market, consumers are able to purchased products from all over the world, and local companies can sell all over the world. For consumers this can mean a greater variety of products.

***Permission to duplicate this test is granted.**

Consumer Education
Unit 6

Unit Evaluation Form

Student Name ______________________ Unit Rating ________

Assignment Sheet 1—Evaluate Features of New Products Rating ______

Comments: ______________________________________

____

Assignment Sheet 2—Identify Recycling Efforts in Your Community Rating ______

Comments: ______________________________________

____

Assignment Sheet 3—Research Origins of Consumer Products Rating ______

Comments: ______________________________________

____

Assignment Sheet 4—Design a Product or Service for the Future Rating ______

Comments: ______________________________________

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________ Date ________

Student Signature ______________________ Date ________

***Permission to duplicate this form is granted.**

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Consumer Education
Unit 6

Information Sheet

1. **Terms and definitions**

   a. **Acid rain** — Atmospheric moisture (rain, sleet, snow) that absorbs acid particles and falls to the earth; has a pH value of less than 5.6

   b. **Consumer** — A person who buys goods and services

   c. **Emission** — Pollutant discharged into the air

   d. **Energy efficient** — The ability to produce a desired effect without excess waste of resources

   e. **Environment** — The total of the conditions and life experiences an individual has in their surroundings

   f. **Fossil fuels** — Hydrocarbon compounds derived from the remains of organisms (plants and animals) buried millions of years ago

   Examples: Oil, coal, natural gas

   g. **Personal identification number (PIN)** — A code number needed to access various electronic systems

   h. **Pollution** — A reduction in the quality of the environment by the introduction of impurities

   i. **Recycling** — Transforming waste products into new products

   j. **Smog** — A combination of smoke and fog forming an atmosphere polluted with industrial emissions and automobile exhaust

   k. **Waste** — Useless, unwanted, or discarded material

2. **Ways technology affects consumer products**

   a. **Cost** — Technology can both raise and lower the cost of a product, depending on how the technology is used.

   b. **Choices** — Many new products are offered each year in hopes that consumers will need or want them.

   c. **Availability** — Many new products are made available worldwide and year-round; obsolete products are no longer available.

Information Sheet

d. **Desirability** — Through the influence of media technology, consumers "want" new and improved products; older products lose their appeal or usefulness.

e. **Accessibility** — Because of new technology, new products are easier to produce, easier to deliver to consumers, and easier to purchase.

3. How technology has increased and decreased the cost of consumer products

a. **Increasing costs**

(1) Reasons why technology has increased the cost of some consumer products

(a) Higher research and development costs

(b) Optional features or equipment added to basic items

(c) Increased safety features required by consumers or the government

(2) Examples of consumer products that have increased costs

(a) Automobiles—Have steadily increased in price because of new electronic features, expensive safety features such as anti-lock brakes and air bags, and new emission controls to protect the environment from hazardous exhaust fumes.

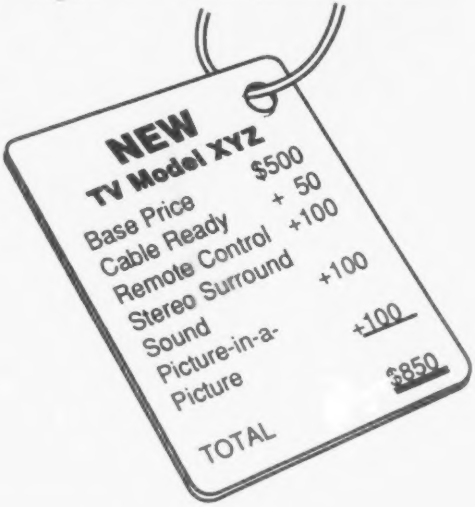
(b) Home appliances—Have increased in cost as manufacturers have added new optional features such as ice/water in the doors of refrigerators, clothes washers and dryers with additional cycles, and ovens and dishwashers with additional insulation to save energy. Sandwich makers, bread makers, and coffee makers are new conveniences available to consumers. Many consumers are willing to pay more for convenience.

(c) Home accessories—Add to the cost of a home, but also make a home more secure, more energy efficient, more comfortable, and easier to maintain. These accessories include home security systems and alarms, stain-resistant carpet, improved doors and windows, and easy-to-clean wall coverings.

Information Sheet

- Televisions—Have increased in price as new capabilities are added such as cable viewing, remote controls, stereo sound, picture-in-a-picture, high definition screen, and built-in videocassette recorders.

Figure 1—Technology can raise cost.


NEW
TV Model XYZ
Base Price $500
Cable Ready + 50
Remote Control +100
Stereo Surround Sound +100
Picture-in-a-Picture +100
TOTAL $850

b. **Decreasing cost**

(1) Reasons why technology has decreased the cost of some consumer products

- (a) Foreign production with reduced labor costs
- (b) New inventions and discoveries that are cheaper
- (c) More efficient production and delivery techniques

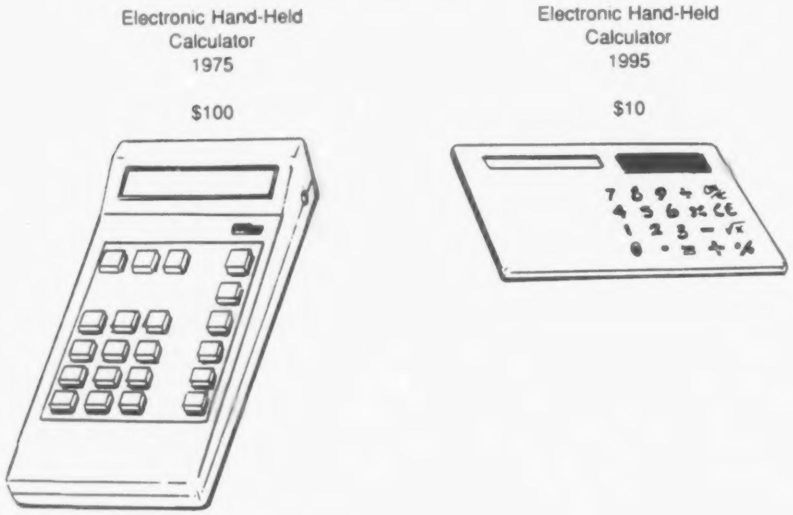
(2) Examples of consumer products that have decreased costs

- (a) Foreign-made clothing—Is cheaper because of lower labor costs. U.S. companies compete by using improved technological machines that produce at a faster rate, with less labor involved.
- (b) Many out-of-season or foreign foods—Are available to consumers at reasonable prices because of advances in agriculture and transportation technology.
- (c) Computers—Have dropped dramatically in price with the development of the microchip.

Information Sheet

(d) Calculators—Were cheaper once they were mass produced.

Figure 2—Technology can lower cost.



4. Examples of obsolete consumer products

Note: Many products disappear from the market each year as new technology develops better models or replacement items. Although many of the following examples can still be obtained, they are considered novelty items rather than high demand products.

a. Home entertainment products including LP records and record players, 8-track tapes and tape players, and black and white televisions

b. Clothing fads and home sewing products including polyester double knits and treadle sewing machines

c. Business equipment including adding machines, manual cash registers, and manual typewriters

d. Small home appliances including coffee percolators and wind-up alarm clocks

Information Sheet

5. **Technology devices or services used for consumer shopping**

   a. **Electronic cash registers**

      (1) Used to keep records of cash and charge sales by departments

      (2) Most are tied to computer systems that also track inventories

      (3) Can calculate taxes automatically

      (4) Can be used to determine change owed to customer

   b. **Electronic scanners**

      (1) Used to read the universal bar code printed on packages or labels of products

      Figure 3

      6165500067 2

      (2) May be in the form of a hand-held light pen attached to a cash register or may be installed in a counter for items to be passed over it (such as in a supermarket scanner)

      (3) Speeds up the checking out process

   c. **Home shopping**

      (1) Allows the consumer to shop and buy products without having to leave home

      (2) Available products are advertised to consumers through catalogs or cable television.

      (3) Purchases can be ordered by telephone, fax, or computer.

Information Sheet

d. **Shoplifting prevention tags**

(1) Attach to clothing items or packages

(2) Must be removed by clerks at point-of-sale so alarm will not sound when exiting store

(3) Used to prevent shoplifting which ultimately lowers store profits and raises consumer prices

e. **Motorized shopping vehicles**—Used by people with physical disabilities or the elderly to make shopping easier

6. **Ways technology has impacted on consumer finances**

a. **Credit cards**

(1) Allow consumers to make purchases conveniently without having to carry cash.

(2) Fees and interest are charged by the credit card companies for this privilege to pay at a later date.

Note: Fees and the annual percentage rate charges can vary widely from one credit company to another.

b. **Electronic fund transfers (EFT)**

(1) Allow consumers to pay bills or transfer money between accounts through the use of a computer accessed to the bank's computer.

(2) EFT cards with assigned personal identity numbers (PIN) can also be used in some locations at point-of-sale terminals or automatic teller machines.

(3) Home computers can now be used to pay many bills without having to write checks.

Information Sheet

7. Environmental problems and possible technology solutions

Environmental Problems	Possible Technology Solutions
a. Air and water pollution, acid rain, and smog primarily caused by automobiles and electrical power plants that burn fossil fuels	(1) More energy-efficient vehicles (2) Mass transportation (3) More efficient conversion of fuels to energy with fewer harmful emissions (4) More use of alternative energies such as solar and wind
b. Excess waste and inadequate waste disposal	(1) Improved landfills with better liners and groundwater monitoring devices (2) New incinerators with advanced combustion systems and state-of-the-art air pollution controls (3) Improved collection and processing of recycled glass, paper, plastic, aluminum, scrap metals, wood, and motor oils (4) More products made from recycled materials (5) Fewer products that are disposable or over-packaged

Note: Consumers can be very powerful in demanding these changes. Remember that actions speak louder than words. As more people purchase energy-efficient, environmentally-safe products, companies will respond with more "earth-friendly" choices.

Information Sheet

8. Impact of technology on the U.S. and world economy

a. The movement of products, capital, technology, information, and ideas around the world is continuing to increase.

b. Many U.S. companies are buying foreign companies; many foreign companies are buying U.S. companies.

c. Many U.S. companies have opened foreign offices to promote their products or services to new markets; many foreign companies have opened U.S. offices to promote their products and services to U.S. markets.

d. As countries become more intertwined economically, they also become more dependent on each other. Stock markets are sensitive to changes in other countries because of this interdependence between countries.

e. Consumers are also experiencing more of the world through increased travel, imported products, immigration of populations, international relief and environmental organizations, and the media.

f. All of these factors lead to a globalization of ideas, interests, and tastes.

g. In a free market, consumers are able to purchase products from all over the world, and local companies can sell all over the world.

h. For consumers this can mean a greater variety of products.

Examples of products imported to the U.S.: Electronic parts from Japan, clothes from Korea, food from South American countries

Examples of products exported to other countries: Blue jeans, hamburgers, cosmetics, agriculture commodities

Consumer Education
Unit 6

Assignment Sheet 1—Evaluate Features of New Products

Name ______________________________ Overall Rating ________

Evaluation criteria	**Rating**
Products listed are appropriate	______
Questions are answered correctly	______

Introduction: As new technology is developed, consumers are faced with decisions about whether or not the new products will be of service to them. New products enter the market on a regular basis. To a great extent it is the consumer who decides whether the product is a success or failure. Mass media and advertising attempt to influence the consumer's choice. It is the consumer's responsibility to be informed about the product and to make wise choices when purchasing new products.

Directions: Think of new clothing, food, household, and school products that are available to consumers this year. These could be totally new inventions or just products with new features made possible through technology. Then answer the questions that follow.

1. New clothing or accessory item— ______________________________
   a. Whom is this designed for? ______________________________
   b. Who is the manufacturer? ______________________________
   c. Where is this produced? ______________________________
   d. Where can this be purchased in your community? ______________________________
   e. How did you become aware of this product? ______________________________
   f. Describe how this is a **new** product. ______________________________
   ____
   g. Do you think this product will be successful? Why? ______________________________
   ____

Assignment Sheet 1

2. New food product— ____________________

   a. Whom is this designed for? ____________________

   b. Who is the manufacturer? ____________________

   c. Where is this produced? ____________________

   d. Where can this be purchased in your community? ____________________

   e. How did you become aware of this product? ____________________

   f. Describe how this is a **new** product. ____________________

   ____

   g. Do you think this product will be successful? Why? ____________________

   ____

3. New household product or device— ____________________

   a. Whom is this designed for? ____________________

   b. Who is the manufacturer? ____________________

   c. Where is this produced? ____________________

   d. Where can this be purchased in your community? ____________________

   e. How did you become aware of this product? ____________________

   f. Describe how this is a **new** product. ____________________

   ____

   g. Do you think this product will be successful? Why? ____________________

   ____

Assignment Sheet 1

4. New school product— ______________________

   a. Whom is this designed for? ______________________

   b. Who is the manufacturer? ______________________

   c. Where is this produced? ______________________

   d. Where can this be purchased in your community? ______________________

   e. How did you become aware of this product? ______________________

   f. Describe how this is a **new** product. ______________________

   ____

   g. Do you think this product will be successful? Why? ______________________

   ____

Consumer Education
Unit 6

Assignment Sheet 2—Identify Recycling Efforts in Your Community

Name ____________________ Overall Rating ________

Evaluation criteria	**Rating**
Centers and products are listed correctly	______
Questions are answered completely	______

Introduction: As we approach the 21st century, our landfills are becoming full, and fewer are being built. Modern technology is striving to solve this problem, but until a solution can be developed, we must reduce the volume of our waste. One way to reduce waste is to recycle. Many communities are making an effort to provide their citizens with alternatives that help conserve space in local landfills. This assignment will help you become more aware of local recycling efforts.

Directions: Use a telephone book to make a list of recycling centers in your area. Call or visit them to determine the types of products that they recycle. Then answer the questions that follow.

Recycling Centers	Products for Recycling
a.	
b.	
c.	
d.	
e.	

Assignment Sheet 2

1. Do you have curbside pickup in your neighborhood for recycling products?

   a. If yes, what products can be recycled? ____________________

   b. If no, how could a program be started in your neighborhood? ____________________

   ____

2. Does your school participate in recycling? ______ Describe current or planned program below.

   ____

   ____

   ____

Consumer Education
Unit 6

Assignment Sheet 3—Research Origins of Consumer Products

Name ____________________ Overall Rating ________

Evaluation criteria	**Rating**
Origins of products are correctly identified	______
Chart is complete	______

Introduction: Global mass transportation has made products from around the world available to today's consumer. These products may begin in one country as a raw material, and then be shipped to another country for manufacturing and assembling before the consumer sees them on store shelves. The purpose of this assignment is to see that many countries impact on the great variety of consumer products available today.

Directions: Through research at your school or local library, determine where the following consumer products come from. List the brand name you use in blanks provided. Many products have several countries involved in their production.

Product	What are the raw materials and where are they from?	Where is the product processed, manufactured, assembled, and packaged?
1. Coffee ________		
2. Tennis shoes ________		

Assignment Sheet 3

Product	What are the raw materials and where are they from?	Where is the product processed, manufactured, assembled, and packaged?
3. Food item ________________		
4. Automobile ________________		
5. Clothing item ________________		
6. Television ________________		

Consumer Education
Unit 6

Assignment Sheet 4—Design a Product or Service for the Future

Name ______________________ Overall Rating ________

Evaluation criteria	**Rating**
Design is original	______
Design meets a consumer need or want	______
Questions are answered appropriately	______
Drawing or description is clear and thorough	______

Introduction: How many times have you wished you had something to help you do a certain task, but that product hasn't been invented? Now you have the chance to use your imagination and design the perfect product or service that will make your life in the future easier. New technology is designing new products and services all the time that provide the consumer with conveniences our parents could only dream about. Now put your imagination to work, and come up with something really unique for the future.

Directions: Design a product or service that could be used in the future. Include a sketch of the product or a complete description of the product or service. Then answer the following questions.

1. What consumer **need** or **want** will the product or service appeal to? ______________________
____
2. Is this product or service needed now or only in the future? ______________________
3. Will new technology be needed to produce it? Explain. ______________________
____
4. Whom is your product or service designed for? ______________________
5. Why do you think a consumer would buy this product or service? ______________________
____

Assignment Sheet 4

6. Draw your sketch below or write a description of the product or service.

Housing and Home Management
Unit 7

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss the impact of technology on housing and home management. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to housing and home management with their correct definitions.
2. Select from a list the correct goals of technology in housing and home management.
3. List new materials and technologies used in housing construction.
4. Select true statements concerning energy-efficient technological products for housing.
5. List technological innovations in home appliances and equipment.
6. Match alternative energies used in housing with the correct descriptions.
7. Complete statements concerning automated (SMART) housing.
8. List examples of technology used for home security.
9. Discuss adaptable housing for special populations.
10. Select true statements concerning health hazards from technology and ways to improve the home environment.
11. Identify technology products in your home. (Assignment Sheet 1)
12. Identify sources of indoor air pollution in your home, and summarize improvements needed. (Assignment Sheet 2)
13. Evaluate a housing and home management issue. (Assignment Sheet 3)
14. Design a product that could be used in the home of the future. (Assignment Sheet 4)

Housing and Home Management
Unit 7

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.

2. Review Teaching Suggestions section that follows. Plan for classroom activities.

3. Plan for students with special needs.

4. Make a transparency from the transparency master included with this unit. This appears in the teacher guide only and is designed to be used with the following objective:

   TM 1—Indoor Air Pollution (Objective 10)

5. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.

6. Develop teaching plan. Adjust for different learning styles.

7. Make copies of Unit Evaluation Form.

Delivery and Application

8. Provide students with unit of instruction.

9. Discuss unit and specific objectives.

10. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.

11. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

12. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.

Suggested Activities

13. Make copies of the written test. Add or modify test items as needed.

14. Give written test.

15. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.

16. Reteach and retest as required.

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Contact your local home builders' association, utility service company, or appliance companies for current brochures, videotapes, and promotional literature about new materials and technologies used in home construction.

2. Invite a guest speaker to talk to the class about how technology has improved housing and home management. Invite any of the following individuals as time allows.

    a. Local builder, contractor, or home builders' association representative to discuss new technology for home construction.

    b. Local interior designer or home decorator to discuss new technology for home interiors.

    c. Sales representative to discuss new high-tech appliances, home electronics, or home security systems.

    d. Local utilities representative to discuss home energy use and ways to conserve energy in the home.

    Have the speakers bring examples of new products to demonstrate. Presentations and demonstrations can help to reinforce students' **oral communication skills** and may help them identify **career development** opportunities.

3. Contact a local utility service company about conducting energy audits on students' homes. This activity can help identify ways to save energy and the products of technology that can help in energy conservation.

Suggested Activities

4. Take a field trip to any of the following suggestions as time allows.

    a. Local architect's or designer's office so students can observe a computer-aided design (CAD) system being used to plan a house. Your high school, local area vocational school, or community college may have similar CAD systems that students can observe or even work on.

    b. Local house under construction so students can observe new insulations, energy-efficient windows and doors, or new appliances being installed. Check with local builders to identify suitable houses that could be toured.

    c. Local houses using alternative energies for their heating and electrical needs.

    d. Local house adapted to accommodate the special physical needs of the residents. Point out the changes needed in houses such as sizes of door openings and countertop heights.

    e. Local manufacturing company (if available) that makes prefabricated houses in the factory and then assembles them on site.

    f. SMART HOUSE if one is located in your area. Check with your local builder's association for this information. They may be able to suggest local homes that are using some of the automated concepts if a SMART HOUSE is not close enough to you.

    g. Local parade of homes to see the latest technological innovations.

    Tours and hands-on experience with computers and electronics can help keep your curriculum up-to-date, as well as improve students' understanding of new technology for housing and home management. This also reinforces **communication skills, motivation,** and **interpersonal relations**.

5. Discuss the homeless problem in your area. Have students brainstorm on what technology is needed to provide free or low-cost housing for these individuals and families. This activity can reinforce both **creative thinking** and **critical thinking skills**.

6. Arrange time for students to use the school or local library when researching in Assignment Sheets 2 and 3. Library use reinforces **learning skills** and **reading and writing foundation skills**.

Suggested Activities

Resources Used in Developing This Unit

1. Bakke, Timothy. "Command Kitchen." *Popular Science*. New York: December 1990, p. 112.
2. Cromie, William. "Innovative Housing Construction Technology: Producing the Houses of Tommorrow." *The MIT Report*. Cambridge, MA: September 1989.
3. DiChristina, Mariette. "Canada's Energy Miser." *Popular Science*. New York: December 1990, pp. 94-97.
4. Foster, Josephine, et. al. *Creative Living: Basic Concepts in Home Economics*. New York: Butterick Publishing, 1979.
5. Freundlich, Naomi. "Zone Control for Forced-Air Heat." *Popular Science*. New York: October 1987, p. 42.
6. Gilmore, Elaine. "The Integrated Automated Educated House." *Popular Science*. New York: June 1990, pp. 104-107.
7. Hirst, Eric, et. al. *Energy Efficiency in Buildings: Progress and Promise*. Washington, DC: American Council for Energy-Efficient Economy, 1986.
8. *The Inside Story: A Guide to Indoor Air Quality*. Washington, DC: United States Environmental Protection Agency, September 1988.
9. Marcus, Raymond. "Toxic Gas and Smoke Alarm." *Popular Science*. New York: October 1987, p. 44.
10. Moeller, Dade. "How to Control Radon Gas" *Consumer's Research*. February 1989.
11. Skerrett, P. J. "British Automation Takes Off." *Popular Science*. September 1991, pp. 57-59.
12. Smith, Ralph Lee. *Smart House, The Coming Revolution in Housing*. Columbia, MD: GP Publishing, Inc., 1988.
13. Sovier, Marcelle. "Plastic Moves Home." *Popular Science*. New York: September 1991, p. 56.
14. Wilford, John. "Becoming Martians: Our Next Great Adventure in Space." *Popular Science*. New York: June 1990, pp. 100-103.

Suggested Activities

Suggested Supplemental Resources

1. Audiovisual materials

   a. *Energy Efficient Housing of the Future* slides

   b. *Radon: What It Is and What You Can Do About It* videotape

   a and be are available from:

   Oklahoma State University Cooperative Extension Service
   340 Home Economics
   Stillwater, OK 74078

   c. *Home Security* videotape

   d. *Energy Conservation* videotape

   c and d are part of the *Do-It-Yourself* series and are available from:

   Hearlihy and Co.
   714 West Columbia
   P.O. Box 869
   Springfield, OH 45501
   800-622-1000

2. Educational resource materials or pamphlets from the following:

   a. Local cooperative extension service for new fact sheets about housing, home management, and energy conservation.

   b. Local utility companies and appliance manufacturers for videotapes and handouts about technology in the home.

   c. State energy conservation department—This may be a division of your state's corporation commission or department of energy.

   d. National Association of Home Builders for more information about the SMART HOUSE at the following address:

   SMART HOUSE
   400 Prince George's Boulevard
   Upper Marlboro, MD 20772-8731
   301-249-4000

Suggested Activities

e. U.S. Department of Energy
Educational Programs Division
ER 44, Room 3F-077
Washington, DC 20585
202-586-1634

f. Conservation and Renewable Energy Inquiry and Referral Service
P.O. Box 8900
Silver Spring, MD 20907
800-523-2920

Housing and Home Management
Unit 7

Answers to Written Test

1. a. 6
   b. 10
   c. 4
   d. 3
   e. 2
   f. 14
   g. 8
   h. 13
   i. 12
   j. 1
   k. 11

2. a, c, d, e, h

3. a. New materials—Any one of the following:

   (1) Plastics for windows, insulation, furnishings, and exteriors
   (2) Flexible wiring which combines many types of house wires
   (3) Flexible pipes with quick connections for gas appliances
   (4) Products with superconductivity
   (5) Alternative adhesives and fasteners used instead of nails

   b. New technologies—Any one of the following:

   (1) Computer-aided design (CAD) for custom designing your house
   (2) Automated or computer-aided manufacturing (CAM) for prefabricating your house from the CAD plan so it can be assembled on the site
   (3) Pop-up assemblies that can be unfolded in one minute for quick, portable housing

4. a. T
   b. T
   c. F

5. Any two of the following:

   a. Appliances and HVAC equipment with improved energy efficiency
   b. Appliances and HVAC equipment electronically programmed to operate at most economical energy (off peak) time
   c. Appliances with synthesized speech to inform residents of problems or operation directions
   d. Appliances with improved performance, convenience, or quality

6. a. 2
   b. 4
   c. 1

Answers to Written Test

7. a. National Association of Home Builders
   b. Electronic
   c. Zones
   d. Three cables

8. Any four of the following:

   a. Security alarm systems

      (1) Image analysis
      (2) Infrared sensors
      (3) Voice recognition
      (4) Alarm connections to local emergency services
      (5) Video cameras

   b. Lights

      (1) Solar-powered security lights
      (2) Infrared-activated security lights
      (3) Timers programmed to turn lights off and on

   c. Locks

      (1) Automatic garage door openers
      (2) Improved door and window locks
      (3) Remote and automatic timer locks

   d. Other security sensors

      (1) Security robots that roam and secure home
      (2) Motion-sensitive lights
      (3) Telephone attachment which makes the phone a temporarily unlisted number
      (4) Voice alert smoke detectors that give instructions to a safe exit

Answers to Written Test

9. Discussion should include:

   a. Wide entrances and wheelchair accessible outlets, appliances, and bathrooms
   b. Door levers instead of door knobs
   c. Grab bars in bathrooms and showers
   d. Easily accessible faucets
   e. Motion- or sound-sensitive switches that automatically turn devices off and on
   f. Remote and voice synthesis controls
   g. Large, easy-to-read labels
   i. Computer nutrition system which plans menus and makes market lists and recipes for family members on special diets
   j. Electronic mail

10.

10.	a.	F	d.	F
	b.	T	e.	T
	c.	T	f.	F

Housing and Home Management
Unit 7

Written Test

Name ______________________________ Score ______________

1. Match the terms on the right with their correct definitions.

______a. Period of highest utility usage

______b. Naturally-occurring gas emitted from radioactive decay of the element radium which is found in many types of rocks and soils

______c. Mechanical systems used in a house for climate control

______d. The capacity to produce motion, heat, or light

______e. Energy from a renewable resource

______f. Controlling one area of the house independently of the whole house

______g. Any introduced gas, liquid, or solid that makes a resource unfit for a specific purpose

______h. Complete disappearance of electrical resistance in a substance at temperatures near absolute zero

______i. Measure of resistance to heat flow

______j. Level of pollutants in the air

______k. Transforming waste products into new products

1. Air quality
2. Alternative energy
3. Energy
4. Heating, ventilating, and air conditioning
5. Induction cooking
6. Peak load
7. Pesticide
8. Pollutant
9. Programmed power
10. Radon
11. Recycling
12. R-value
13. Superconductivity
14. Zone control

Written Test

2. Select from the following list the correct goals of technology in housing and home management by placing an "X" in the appropriate blanks.

______a. To make houses more comfortable for the residents

______b. To make houses more expensive

______c. To integrate electronics and computers into home management

______d. To improve the energy-efficiency of houses

______e. To improve home security

______f. To use fewer natural products and more synthetic products

______g. To make houses smaller

______h. To make houses easier to construct and maintain

3. List one new material and one new technology used in housing construction.

a. New material — ______________________________

____

b. New technology — ______________________________

____

4. Select true statements concerning energy-efficient technological products for housing by placing a "T" or "F" next to the true or false statements.

______a. Polystyrene foam beads inserted into cement blocks have 3 times the insulating value and 40% less weight than ordinary cement blocks.

______b. Low emissivity windows have a microscopically thin metallic coating between the panes to reflect heat.

______c. Polymer-coated windows resist burglars.

5. List two technological innovations in home appliances and equipment.

a. ______________________________

b. ______________________________

Written Test

6. Match alternative energies used in housing on the right with the correct descriptions.

______a. Produced by drilling wells to underground natural steam formations; steam from pressurized formations is used to drive turbine generators which produce electricity

______b. Uses semiconducting materials such as silicon to convert sunlight directly to electricity

______c. Uses solar collectors to store and transmit the sun's heat for heating rooms and water

1. Active solar
2. Geothermal
3. Passive solar
4. Photovoltaic solar cell
5. Wind

7. Complete the following statements concerning automated (SMART) housing by circling the correct answers.

   a. SMART HOUSE is a joint venture of the (Associated General Contractors, National Association of Home Builders) and over 40 participating firms.

   b. The fully automated SMART HOUSE will provide an energy-efficient, convenient house with integrated systems and (electronic, hydraulic, pneumatic) controls.

   c. The SMART HOUSE uses a central computer microprocessor to control electrical, HVAC, communications, and security by (rooms, zones) or for the whole house.

   d. The SMART HOUSE uses a new flexible integrated wiring system with (one cable, three cables) to control all signals throughout the house.

8. List four examples of technology used for home security.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

Written Test

9. Discuss adaptable housing for special populations.

____

____

____

____

____

____

10. Select true statements concerning health hazards from technology and ways to improve the home environment by placing a "T" or "F" next to the true or false statements.

______a. The more loosely constructed the house, the fewer indoor/outdoor air exchanges contributing to poor indoor air quality.

______b. Poor air quality in the house may cause respiratory illness or even increase your risk for cancer.

______c. Carbon dioxide, carbon monoxide, and nitrogen dioxide result from unvented combustion, human respiration, tobacco smoke, ranges, stoves, fireplaces, and combustion engines.

______d. Formaldehyde comes from cotton and wool upholstery.

______e. Asbestos may break down into microscopic size fibers and be inhaled.

______f. Microorganisms such as mold and dust mites live only in dry, cold places.

***Permission to duplicate this test is granted.**

Housing and Home Management
Unit 7

Unit Evaluation Form

Student Name ______________________________ Unit Rating __________

Assignment Sheet 1—Identify Technology Products in Your Home Rating _____

Comments: ____

____

Assignment Sheet 2—Identify Sources of Indoor Air Pollution in Your Home, and Summarize Improvements Needed Rating _____

Comments: ____

____

Assignment Sheet 3—Evaluate a Housing and Home Management Issue Rating _____

Comments: ____

____

Assignment Sheet 4—Design a Product That Could Be Used in the Home of the Future Rating _____

Comments: ____

____

Written Test Scores

Pretest _____ Posttest _____ Other _____

Other ____

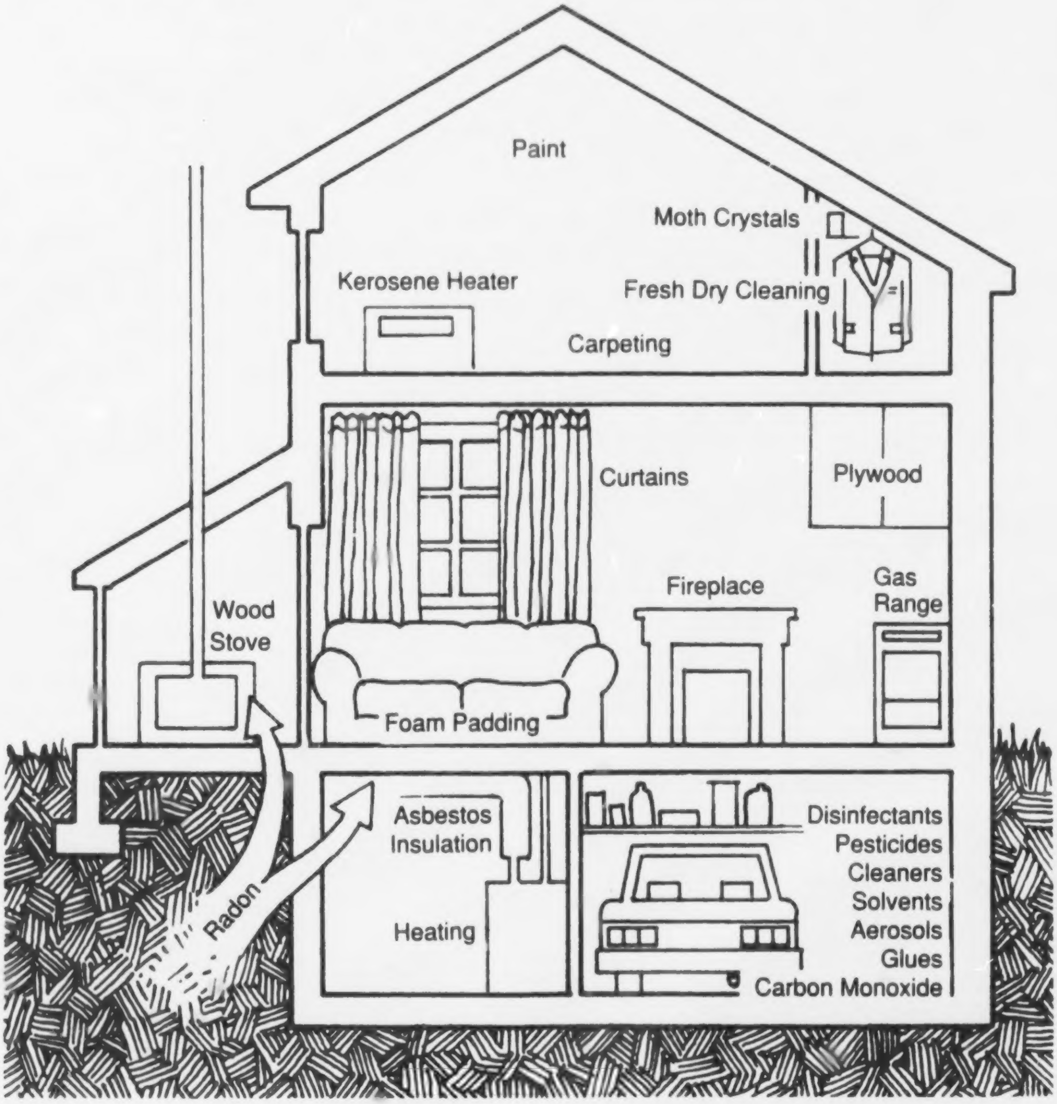
____

Teacher Signature ______________________________ Date __________

Student Signature ______________________________ Date __________

***Permission to duplicate this form is granted.**

Indoor Air Pollution


Paint
Moth Crystals
Kerosene Heater
Fresh Dry Cleaning
Carpeting
Curtains
Plywood
Fireplace
Gas Range
Wood Stove
Foam Padding
Asbestos Insulation
Heating
Radon
Disinfectants
Pesticides
Cleaners
Solvents
Aerosols
Glues
Carbon Monoxide

Courtesy of U.S. Environmental Protection Agency

Housing and Home Management
Unit 7

Information Sheet

1. **Terms and definitions**

   a. **Air quality** — Level of pollutants in the air

   b. **Alternative energy** — Energy from a renewable (replaceable) resource

   Examples: Sun, wind, water, plants, animals

   c. **Energy** — The capacity to produce motion, heat, or light

   d. **Heating, ventilating, and air conditioning (HVAC)** — Mechanical systems used in a house for climate control

   e. **Induction cooking** — Surface units heat and cool quickly utilizing a magnetic field to generate heat

   f. **Peak load** — Period of highest utility usage

   g. **Pesticide** — A chemical used to kill or control pests such as insects or weeds

   h. **Pollutant** — Any introduced gas, liquid, or solid that makes a resource unfit for a specific purpose

   i. **Programmed power** — Capability to deliver more than one type of electrical power such as alternating current (AC) or direct current (DC)

   j. **Radon** — Naturally-occurring gas emitted from radioactive decay of the element radium which is found in many types of rocks and soils

   k. **Recycling** — Transforming waste products into new products

   l. **R-value** — Measure of resistance to heat flow

   Note: Higher numbers indicate better insulating properties.

   m. **Superconductivity** — Complete disappearance of electrical resistance in a substance at temperatures near absolute zero

   n. **Zone control** — Controlling one area of the house independently of the whole house

Information Sheet

2. **Goals of technology in housing and home management**
    a. To improve the energy-efficiency of houses
    b. To integrate electronics and computers into home management
    c. To improve home security
    d. To make houses easier to construct and maintain
    e. To make houses more comfortable for the residents

3. **New materials and technologies used in housing construction**
    a. **New materials**
        (1) Plastics for windows, insulation, furnishings, and exteriors
        (2) Flexible wiring which combines many types of house wires
        (3) Flexible pipes with quick connections for gas appliances
        (4) Products with superconductivity
        (5) Alternative adhesives and fasteners used instead of nails
    b. **New technologies**
        (1) Computer-aided design (CAD) for custom designing your house

        Note: The computer can check your design to make sure it meets all building codes, and the architect or builder can double check for construction capabilities.

        (2) Automated or computer-aided manufacturing (CAM) for prefabricating your house from the CAD plan so it can be assembled on the site

        Note: Five workers and a crane can assemble the roof, floor, and walls of a prefabricated house in one day. This is a tremendous time savings from traditional house construction on site.

        (3) Pop-up assemblies that can be unfolded in one minute for quick, portable housing

        Note: These could be used for emergencies or for the homeless.

Information Sheet

4. **Energy-efficient technological products for housing**

   a. **New insulations**

      (1) Plastics and polymer sheathing—Have super insulation abilities (high R-values)

      (2) Cementaceous foams—Can be sprayed or poured into areas and dry like cement

      (3) Insulated panels—Sandwich style for both interior and exterior walls

      (4) Polystyrene foam beads inserted into cement blocks—Have 3 times the insulating value and 40% less weight than ordinary cement blocks

   b. **Windows**

      (1) Multi-paned glass—Several panes of glass with insulating air space between

      (2) Super glazing or super glass—Has insulation value of R-8 (almost twice that of other energy-efficient windows)

      (3) Low emissivity (low E) glass—Windows glazed with a microscopically thin metallic coating between the panes to reflect heat

      (4) Gas-filled, low emission glass—Has argon or krypton gas between panes to increase R-value

      (5) Polymer-coated windows—Resist grime and dirt for less cleaning

   c. **Doors**

      (1) Metal doors with tight magnetic seals

      (2) Improved seals and weatherstripping to reduce energy loss

      (3) More insulation in door construction

Information Sheet

5. Technological innovations in home appliances and equipment

a. Appliances and HVAC equipment with improved energy efficiency

Examples: Washing machines that use less water, hot water heaters with improved insulation, clothes dryers equipped with electronic sensors to turn off when clothes are dry, HVAC equipment that use alternative energies or combinations of energy sources

b. Appliances and HVAC equipment electronically programmed to operate at most economical energy (off peak) time

Examples: Dishwashers with delay starts, programmable thermostats that reduce the heating at night or while residents are away from home

c. Appliances with synthesized speech to inform residents of problems or operation directions

Examples: "Refrigerator door is open." "Freezer temperature is above freezing."

d. Appliances with improved performance, convenience, or quality

Examples: Laser disks and compact disks with better sound quality and durability, cable and satellite-provided television programs for improved reception of signals and more choices, small appliances that are cordless, magnetic induction cooking that generates heat to utensil only, quieter dishwasher, multipurpose appliances, washing machines that automatically dispense cleaners

6. Alternative energies used in housing

a. **Wind energy**

(1) Usually harnessed by windmills or wind machines which connect to electric generators or pumps

(2) Can be used to produce electricity for individual houses or entire cities

Note: Use of this type of energy source is limited except to areas with regular wind speeds of at least 10 mph. Storage batteries or a backup source of energy is needed during low wind conditions.

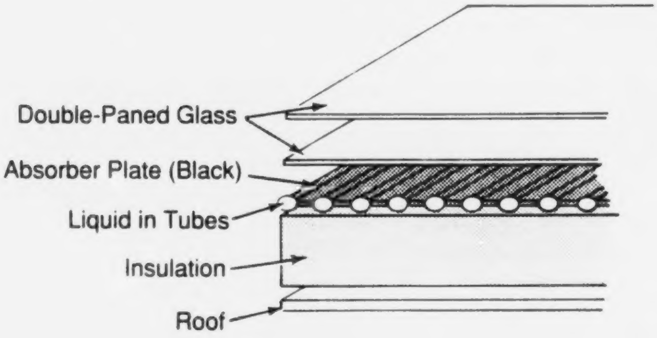
Information Sheet

b. **Solar energy**—Uses energy from the sun for heat and to generate electricity

(1) Passive—Uses natural heat from sun to assist in home heating

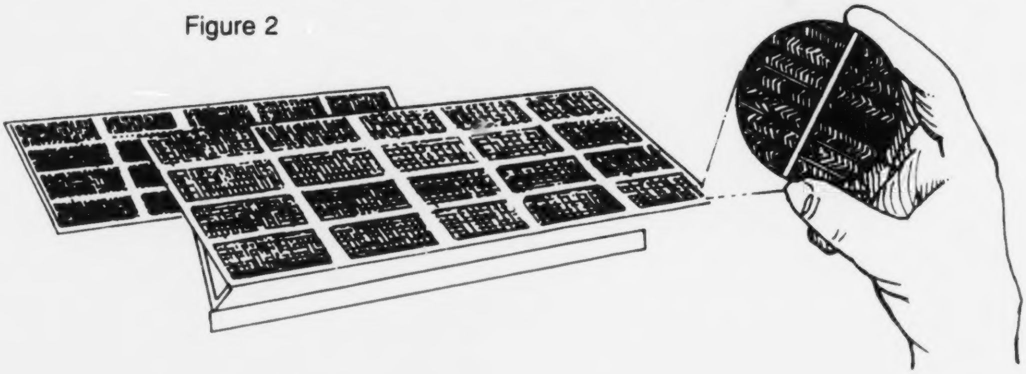
(2) Active—Uses solar collectors to store and transmit the sun's heat for heating rooms and water

Figure 1



(3) Photovoltaic cell—Uses semiconducting materials such as silicon to convert sunlight (*photo*) directly to electricity (*voltage*)

Figure 2



Photovoltaic Modules

A Single-Crystal Silicon Solar Cell

c. **Geothermal energy**

(1) Produced by drilling wells to underground (*geologic*) natural steam (*thermal*) formations

(2) Steam from pressurized formations is used to drive turbine generators which produce electricity.

Information Sheet

7. Automated (SMART) housing

a. SMART HOUSE is a joint venture of the National Association of Home Builders with over 40 participating firms such as AT&T Network Systems; AMP, Inc.; Carrier Corporation; Interior Piping Systems; and Pioneer Electronics.

b. The fully automated SMART HOUSE will provide an energy-efficient, convenient house with integrated systems and electronic controls. Many of these innovations promise to be the standards for the future.

c. The SMART HOUSE has the following main features:

(1) Uses a central computer microprocessor to control electrical, HVAC, communications, and security by zones or for the whole house.

(a) House air/comfort control system can be custom designed or can be set on one of the following pre-set modes: vacation, awake, asleep, unoccupied, and automatic.

(b) Using the system's modes, the house can be maintained in zones with individual rooms at different settings for lighting, temperature, and security according to the time they are most likely to be used.

(2) The SMART HOUSE uses a flexible integrated wiring system with three cables to control all signals throughout the house.

(a) Hybrid branch cable distributes 120 VAC power and relays control messages to and from special SMART outlets.

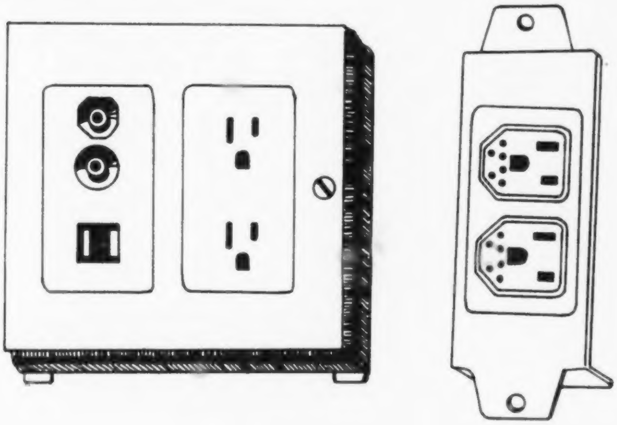
(b) Communications cable distributes internal and external audio, video, telephone, and fiberoptic signals to special SMART outlets.

(c) Applications cable distributes control communications and 12 VDC for low-voltage products such as switches, smoke detectors, and security systems.

Information Sheet

(3) Uses special universal SMART outlets which will accept any type of electrical products including telephones, fax machines, computers, appliances, stereos, and televisions.

Figure 3



(4) Uses flexible piping and easy-connect gas outlets for easy placement and accessibility for gas appliances.

(5) Integrates the most technologically advanced home appliances and equipment for optimum energy usage and convenience.

Note: Many features of the SMART HOUSE are being used when building and remodeling houses. There are many other automated housing projects under development.

8. Examples of technology used for home security

a. Security alarm systems

(1) Image analysis

(2) Infrared sensors

(3) Voice recognition

(4) Alarm connections to local emergency services

(5) Video cameras

Information Sheet

- b. Lights
  - (1) Solar-powered security lights
  - (2) Infrared-activated security lights
  - (3) Timers programmed to turn lights off and on
- c. Locks
  - (1) Automatic garage door openers
  - (2) Improved door and window locks
  - (3) Remote and automatic timer locks
- d. Other security sensors
  - (1) Security robots that roam and secure home
  - (2) Motion-sensitive lights
  - (3) Telephone attachment which makes the phone a temporarily unlisted number
  - (4) Voice alert smoke detectors that give instructions to a safe exit

9. Adaptable housing for special populations

- a. Wide entrances and wheelchair accessible outlets, appliances, and bathrooms
- b. Door levers instead of door knobs
- c. Grab bars in bathrooms and showers
- d. Easily accessible faucets
- e. Motion- or sound-sensitive switches that automatically turn devices off and on
- f. Remote and voice synthesis controls
- g. Large, easy-to-read labels
- h. Computer nutrition system which plans menus and makes market lists and recipes for family members on special diets
- i. Electronic mail

Information Sheet

10. Health hazards from technology and ways to improve the home environment

a. Conditions that exist in our houses

(1) Poor air quality in the house may cause respiratory illness or even increase your risk for cancer.

(2) The more tightly constructed the house, the fewer indoor/outdoor air exchanges contributing to poor indoor air quality.

(3) Indoor air pollutants include:

(a) Carbon dioxide, carbon monoxide, and nitrogen dioxide resulting from unvented combustion, human respiration, tobacco smoke, ranges, stoves, fireplaces, and combustion engines

(b) Formaldehyde from newly installed foam insulation, particle boards, plywood, paneling, and glues made from formaldehyde resins

(c) Radon particles which may cling to dust

Note: Radon enters buildings through foundation cracks or seams, floor drains, and slab joints. Radon is inhaled into the lungs, increasing the risk of lung cancer.

(d) Asbestos which may break down into microscopic size fibers and be inhaled

Note: Asbestos was used extensively in building materials until the late 1970s when it was discovered to cause lung cancer.

(e) Microorganisms such as mold and dust mites which live in moist, warm places such as furnace ducts, carpet, and drip-pans of refrigerators

(f) Household products such as oven cleaners, aerosols, pesticides, and automotive care products

(4) Electromagnetic fields (EMF) surround the vast number of electronics in our home and may be a health concern.

Information Sheet

b. Technological home improvements needed

(1) Design houses with more complete air exchanges.

(2) Use mechanical air filters.

(3) Use improved cleaning products that are safe to use and effective in killing mold and dust mites.

(4) Use cleaning systems designed to control dust such as water filter vacuum cleaners.

(5) Use low-EMF designed electric appliances including blankets, irons, razors, and hair dryers.

(6) Use containers with spray pumps instead of aerosol propellants.

(7) Educate consumers about proper and safe disposal of chemicals.

Housing and Home Management
Unit 7

Assignment Sheet 1—Identify Technology Products in Your Home

Name ______________________ Overall Rating ________

Evaluation criterion	**Rating**
Products are correctly identified	______

Introduction: Technology is all around us, and it has had a tremendous impact on housing and home management. This assignment will increase your awareness of the technology already being used in your home.

Directions: Identify the technology products that are used in your home for the purposes below.

Purpose	Technology Products in Home
1. Energy conservation	
2. Home security	
3. Comfort	
4. Communication	
5. Entertainment	
6. Home management	
7. Education	

Housing and Home Management
Unit 7

Assignment Sheet 2—Identify Sources of Indoor Air Pollution in Your Home, and Summarize Improvements Needed

Name ______________________________ Overall Rating __________

Evaluation criteria	Rating
Checklist is completed as required	______
Summary is well-written and completed as required	______

Introduction: Many homes have health hazards directly or indirectly caused by technology. Indoor air pollution is one problem that needs to be identified and corrected. This assignment will help you see whether or not your home could be hazardous to your health. Through research you can determine what needs to be done to improve your indoor air environment.

Directions: Complete the following checklist to identify the sources of indoor air pollution in your home.

Source of Air Pollution	Yes	No
1. Is your furnace/heater vented to the outside?		
2. Are the filters on your air-conditioning unit changed monthly?		
3. Do you use a fireplace or wood stove?		
4. Do you use a kerosene heater?		
5. Is paint in the house lead-free?		
6. Are dry-cleaned clothes hung outside to be aired out before bringing them inside?		
7. Has you home been tested for radon?		
8. Is asbestos used for insulation or as tiles in your home?		
9. Does anyone in your home smoke tobacco?		
10. Is the cooktop vent in the kitchen used when cooking?		
11. Does water stand in the air-conditioning drain or refrigerator drip pan?		

Assignment Sheet 2

Source of Air Pollution	Yes	No
12. Are carpets and drapes cleaned yearly?		
13. Are blinds, furniture, and vents dusted weekly?		
14. Are floors mopped weekly?		
15. Is bedding washed weekly?		
16. Are aerosol products such as hair sprays and cleaning products used frequently (daily, weekly)?		
17. Have you had new carpeting, drapes, furniture with foam padding, or furniture or cabinets made from particle boards or plywood installed in the last six months?		
18. Have you had new painting or remodeling completed in the last six months?		
19. Is an automobile ever allowed to idle in the garage such as to warm it up in the morning or for car repair?		
20. Are any of the following products used frequently (monthly) inside your home: oven cleaners, spray paints, solvents, pesticides, glues, air fresheners, or disinfectants?		

Summary: Which sources of indoor air pollution that you identified in the checklist can you take care of now? How can you improve your indoor air environment? How could technology help improve your air? Research specific problems at your school or local library for possible solutions. Describe below.

Housing and Home Management
Unit 7

Assignment Sheet 3—Evaluate a Housing and Home Management Issue

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Evaluation states both good and bad aspects of issue	______
Opinion statement is clear and well-written	______

Introduction: There are positive and negative aspects to any technology used in the home. The following issues are situations that currently exist. In this assignment you will evaluate one of the issues and state how you feel about that issue.

Directions: Select one of the following issues, and evaluate both the good and bad aspects of that issue. You may need to research your topic for more information about it. Then state your opinion about the issue, and explain why you have that opinion. Be prepared to defend you opinion during class discussion or debate.

Issues

1. With increased technology, older citizens can live alone at home.
2. With increased technology, children can take care of themselves after school and in the evening.
3. Improved home security allows home owners to take worry-free vacations.
4. New energy-efficient appliances raise the purchase price of a home.
5. Homes manufactured in factories instead of on property sites will require fewer workers.
6. New home products made from synthetic products increase indoor air pollution.
7. Curbside recycling is being offered in many neighborhoods.

Housing and Home Management
Unit 7

Assignment Sheet 4—Design a Product That Could Be Used in the Home of the Future

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Product design is clear	______
Product design is creative	______
Product design addresses a human need	______
Explanation of product is complete and well-written	______

Introduction: This assignment is an opportunity for you to use your imagination as an inventor would. First you identify the problem, and then you try to come up with a solution. New technology is commonly used to solve everyday problems. You may already know of a product that you think will be needed in the home of the future. If not, think of your messiest, least favorite, or most time-consuming job in the house. How could technology make that easier for you? Or, how about someone else in your family? What new product would they like to see?

Directions: Design a product that could be used by humans in the home of the future. Describe your product in detail below, and explain how the product can be used. Draw a complete sketch of the product on the next page.

Product Design Description

____

____

____

____

____

Explanation of Product Use ______________________________

____

Assignment Sheet 4

Product Design Sketch

Clothing and Textiles
Unit 8

Objective Sheet

Unit Objective

After completing this unit, the student should be able to discuss how technology has impacted on clothing and textiles. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the written test.

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms related to clothing and textiles with their correct definitions.
2. List technological advancements in clothing and textiles that have impacted on different areas of the industrial world.
3. Name technological improvements in fabrics and clothing.
4. List uses of the computer in clothing and textiles.
5. Match clothing and textile equipment with their uses in the home or school.
6. Discuss future trends in clothing and textiles.
7. Design clothing for a specialized market. (Assignment Sheet 1)
8. Evaluate given scenarios about how technology has changed the future related to clothing and textiles. (Assignment Sheet 2)

Clothing and Textiles
Unit 8

Suggested Activities

Instructional Plan

Preparation

1. Read the unit carefully and plan for instruction.
2. Review Teaching Suggestions section that follows. Plan for classroom activities.
3. Plan for students with special needs.
4. Obtain films, videotapes, and other resources to supplement instruction of this unit. See ordering information in the Suggested Supplemental Resources section that follows.
5. Develop teaching plan. Adjust for different learning styles.
6. Make copies of Unit Evaluation Form.

Delivery and Application

7. Provide students with unit of instruction.
8. Discuss unit and specific objectives
9. Discuss information sheet. Implement teaching plan to localize, supplement, and personalize the unit. Reinforce basic academic and workplace skills when applicable.
10. Discuss the assignment sheets. Review criteria for evaluation of these activities.

Evaluation

11. Discuss the use of the Unit Evaluation Form with students. Discuss the rating scale that will be used for student evaluation.
12. Make copies of the written test. Add or modify test items as needed.
13. Given written test.
14. Compile assignment sheet ratings and written test scores on the Unit Evaluation Form. Include any additional assignments.
15. Reteach and retest as required.

Suggested Activities

Teaching Suggestions

Note: Skill areas appearing in bold face type in the Teaching Suggestions refer to the academic and workplace skills identified by the American Society for Training and Development (ASTD) and the U.S. Department of Labor. These have been adapted by MAVCC.

1. Have students bring to class unusual items produced by the clothing textile industry such as those listed in Objective 2. Discuss the technology used to produce these products.

2. Invite a guest speaker such as a fabric store owner, clothing manufacturer representative, or extension home economist to talk to the class about how technology has improved fabrics and clothing. Have them bring examples of new products to demonstrate. Presentations and demonstrations can help to reinforce students' **oral communication skills** and may help them identify career opportunities.

3. Demonstrate all new equipment in the home economics classroom. (Objective 5) Show the new features and improvements over older products. Allow students to practice using the new equipment. This reinforces the unit content through **tactile learning skills**.

4. Have students determine the costs involved in new clothing and textile products. Provide catalogs and price lists. Have students discuss which devices they think are worth the costs, and which ones are not. This activity reinforces the students' **critical thinking skills**.

5. Have students compare the costs involved with dry cleaning as opposed to home laundering. What products require dry cleaning? Does that information on a care label influence their decision to buy the garment?

6. Discuss the environmental hazards of dry-cleaning chemicals. How can technology make these chemicals less caustic or eliminate the need for dry cleaning?

7. Display laundry products found in the local market, and discuss the positive and negative effects of using each.

8. Invite a special needs person to class to explain any difficulties they have with clothing. What types of clothing do they need? How has their clothing been adapted? What new products would they like to see to help them? How can technology help them with their clothing needs?

Suggested Activities

9. Demonstrate computer software for clothing and textile design. Allow students to practice using the software. Discuss the purpose of each program. Refer to Suggested Supplemental Resources for ordering information on sample software. This activity can give students a better idea of the innovative methods used by clothing and textile manufacturers today.

   Note: If computers or this software is not available in your classroom, make arrangements for your students to attend the school's computer laboratory, and order the appropriate software so it can be available to your students.

10. For Assignment Sheet 1, you may want to have students design their clothing using the computer. This could give them hands-on experience using CAD and may aid in their **career development**.

11. For Assignment Sheet 2, you could divide the class into groups and have them discuss only one scenario, and give an oral presentation to the class on how their group reacted to their assigned scenario. This could reinforce their **communication skills** and **group effectiveness skills** including **negotiation** and **teamwork**.

Resources Used in Developing This Unit

1. "New Products." *Apparel.* April 1990, p. 82.

2. Price, Ann. "New Fall Fabrics." *Forecast.* Sept./Oct. 1990, p. 12.

3. *Textiles and Apparel in the International Economy.* New York: Macmillan Publishing Co., 1991.

4. "Changes in Labor and Work Forces." *Futurist.* May/June 1991, p. 13.

5. Park, Jan. *What's New in Textiles.* Stillwater, OK: Oklahoma State University Cooperative Extension Service.

6. Rudie, Raye. "Dress Fabrics: Versatility is Key." *Bobbin.* Dec. 1989, pp. 42-44.

7. Rudie, Raye. "Swim With the Ready-To-Wear Trends." *Bobbin.* Jan. 1990, pp. 48, 104.

8. "What's New in Equipment for the Home Economics Professional." *What's New in Home Economics.* March/April 1990, pp. 25-26.

Suggested Activities

Suggested Supplemental Resources

1. Computer software for home economics programs

    a. *Clothing Care*. Explains how proper clothing affects the wearability of garments, and outlines steps for various types of fabrics. Available from:

    Queue, Inc.
    338 Commerce Drive
    Fairfield, CT 06430
    800-232-2224

    b. *Clothing Quiz*. Educational and entertaining game that presents challenging questions about fabrics, clothing management, and consumer skills. Available from:

    Home Economics School Service
    Culver City, CA

    c. *All About Fabrics and Fabric Construction*. Used to reinforce information taught in the classroom. Available from:

    Cotton Computer Service
    Route 1, Box 34
    Bristow, OK 74010

2. Magazine and daily newspaper subscriptions

    Note: You may want to subscribe to either of the following periodicals to help keep you and your class up-to-date on new technology for clothing and textiles.

    a. *Sew News* (magazine)
    P.J.S. Publications, Inc.
    Box 1790
    News Plaza
    Peoria, IL 61614

    b. *Women's Wear Daily* (daily newspaper)
    Fairchild Publications, Inc.
    7 East 12th Street
    New York, NY 10003
    212-741-4000

Clothing and Textiles
Unit 8

Answers to Written Test

1. a. 6
   b. 4
   c. 2
   d. 5
   e. 1

2. a. Transportation—Any one of the following (or others):

      - Airbags
      - Filters
      - Seats and floor coverings

   b. Medicine—Any one of the following (or others):

      - Bandages
      - Artificial organs, joints, and vessels
      - Specially designed clothing for health care workers and patients

   c. Military/government—Any one of the following (or others):

      - Uniforms and helmets
      - Protective gear and clothing

3. Any three of the following:

   a. Easier care
   b. Increased durability of synthetics
   c. Improved wind and water resistance
   d. Improved hand (feel of the fabric) and wearability
   e. Better moisture absorption (including perspiration)
   f. Better insulating qualities
   g. Greater flexibility (easier to move in)
   h. Improved stress resistance
   i. Increased ability to stretch

Answers to Written Test

4. Any three of the following: (Other uses may be listed)

   a. To create a sketch or make a style modification
   b. To reproduce actual color swatches or experiment with a palette of new color possibilities
   c. To quickly alter and automatically change designs and patterns
   d. To send the design directly to the production room in computer-aided manufacturing
   e. To instantly check the grain and nap and to match plaids correctly during production
   f. To calculate the price of the product based on the fabric usage and related costs

5. a. 5
   b. 2
   c. 4
   d. 3

6. Discussion should include:

   a. New clothing and textiles will be much stronger and easier to care for. They will be more comfortable and will hold color better, with less yellowing and pilling.
   b. Clothing and textiles will be designed for a population that has more discretionary leisure time, is more mobile, is more health conscious, and is more concerned about the environment. More research will be done on ways to use technology to better serve the future population.
   c. Clothing and textiles will be designed and manufactured with the aid of the computer. This allow designs and products to be quickly produced and then changed in response to the transient nature of consumers.
   d. Clothing and textiles will be designed for smaller specialized markets instead of mass markets. Technology will allow patterns, color, and design features to be changed quickly.

Clothing and Textiles
Unit 8

Written Test

Name ____ Score __________________

1. Match the terms on the right with the correct definitions.

______a. Unpredictable nature of consumers that calls for rapid changes in products and fashions

______b. A mixture of crude fibers that are feather-weight and ultrafine with one-third the thickness of cotton and one-half the thickness of silk

______c. Using computers to link design information with manufacturing equipment to quickly produce finished products

______d. A manufacturing and marketing system that attempts to get the desirable merchandise to the market when it is in demand

______e. Using the computer to draw, preview, and alter designs

1. Computer-aided design (CAD)
2. Computer-integrated manufacturing (CIM)
3. Contingent workers
4. Microfiber
5. Rapid response
6. Transient nature
7. Xtrafine fiber

2. List one technological advancement in clothing and textiles that has impacted on different areas of the industrial world listed below.

a. Transportation — ____

b. Medicine — ____

c. Military/government — ____

3. Name three technological improvements in fabrics and clothing.

a. ____

b. ____

c. ____

Written Test

4. List three uses of the computer in clothing and textiles.

   a. ______________________________

   b. ______________________________

   c. ______________________________

5. Match clothing and textile equipment with their correct uses in the home or school.

   ______a. Used to join and overcast seams with professional results; especially useful on fabrics that easily ravel

   ______b. Used to smooth cloth and remove wrinkles with the aid of electronic controls and optional features such as automatic shut-off, battery-operation, and ligher weights for easier operation

   ______c. Used for making precision cuts, especially for patchwork quilting and crafts

   ______d. Used to construct clothing and textile products with the aid of electronic controls and optional programs

   1. Electronically controlled washers and dryers
   2. Electronic irons and presses
   3. Electronic sewing machines
   4. Rotary cutters, mats, and rulers
   5. Sergers

6. Discuss future trends in clothing and textiles

   ____

   ____

   ____

   ____

   ____

   ____

***Permission to duplicate this test is granted.**

Clothing and Textiles
Unit 8

Unit Evaluation Form

Student Name ______________________ Unit Rating __________

Assignment Sheet 1—Design Clothing for a Specialized Market Rating ______

Comments: ____

____

Assignment Sheet 2—Evaluate Given Scenarios About How Technology Has Changed the Future Related to Clothing and Textiles Rating ______

Comments: ____

____

Written Test Scores

Pretest ______ Posttest ______ Other ______

Other ____

____

Teacher Signature ______________________ Date __________

Student Signature ______________________ Date __________

***Permission to duplicate this form is granted.**

Clothing and Textiles
Unit 8

Information Sheet

1. **Terms and definitions**

   a. **Computer-aided design (CAD)** — Using the computer to draw, preview, and alter designs (such as designs for clothing and textiles)

   b. **Computer-integrated manufacturing (CIM)** — Using computers to link design information with manufacturing equipment to quickly produce finished products (such as fabrics, garments, or other textile products)

   c. **Contingent workers** — Individuals who are paid only for the work they produce; may work any place, anywhere, or any distance from the office or factory

   Note: This is made possible through technological advances and networking technology.

   d. **Microfiber** — A mixture of crude fibers that are feather-weight and ultrafine (spidery like) with one-third the thickness of cotton and one-half the thickness of silk

   e. **Rapid (Quick) response** — A manufacturing and marketing system that attempts to get merchandise to the market when it is in demand

   f. **Transient nature** — Unpredictable nature of consumers that calls for rapid changes in products and fashions

   Note: Technology makes it easier for manufacturers to respond to the changing demands of consumers.

2. **Areas where technological advancements in clothing and textiles have impacted the industrial world**

   a. Transportation

      - Airbags
      - Filters
      - Seats and floor coverings

Information Sheet

b. Geotextiles

- Liners for toxic waste disposal
- Soil coverings for erosion control
- Underlayments for highway construction
- Liners for ponds and lakes

c. Medicine

- Bandages
- Artificial organs, joints, and vessels
- Specially designed clothing for health care workers and patients

d. Recreation

- Athletic shoes
- Clothing specially designed for each sport such as skiwear, swimwear, biking shorts, jogging suits, etc.
- Special gear for each sport including balls, gloves, pads, tents, backpacks, sails, fishing lines and lures, etc.

e. Military/government

- Uniforms and helmets
- Protective gear and clothing

  Examples: Firefighting, chemical warfare, adverse weather survival

f. Space industry

- Space suits
- Tiles for space craft nose cones

  Note: Other industries impacted by technology include manufacturing, foods, interiors (upholstery, drapes), toys, animal care products, arts and crafts, books, household cleaning, and apparel accessories.

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3. **Technological improvements in fabrics and clothing**
   a. Easier care
   b. Increased durability of synthetics
   c. Improved wind and water resistance
   d. Improved hand (feel of the fabric) and wearability
   e. Better moisture absorption (including perspiration)
   f. Better insulating qualities
   g. Greater flexibility (easier to move in)
   h. Improved stress resistance
   i. Increased ability to stretch
4. **Uses of the computer in clothing and textiles**
   a. To create a sketch or make a style modification
   b. To reproduce actual color swatches or experiment with a palette of new color possibilities
   c. To quickly alter and automatically change designs and patterns
   d. To send the design directly to the production room in computer-aided manufacturing
   e. To instantly check the grain and nap and to match plaids correctly during production
   f. To calculate the price of the product based on the fabric usage and related costs

Information Sheet

5. Clothing and textile equipment and their uses in the home or school

a. **Electronic sewing machines** — Used to construct clothing and textile products with the aid of electronic controls and optional programs

b. **Sergers** — Used to join and overcast seams with professional results; especially useful on fabrics that easily ravel

c. **Electronic irons and presses** — Used to smooth cloth and remove wrinkles with the aid of electronic controls and optional features such as automatic shut-off, battery-operation, and lighter weights for easier operation

d. **Electronically controlled washers and dryers** — Used to clean and dry clothing and textile products; have electronic features such as indicator lights and buzzers that tell the user when a cycle is finished or a load is unbalanced

e. **Rotary cutters, mats, and rulers** — Used for making precision cuts, especially for patchwork quilting and crafts

Note: The circular blades on rotary cutters are extremely sharp and should only be used on special mats designed for use with rotary cutters.

6. Future trends in clothing and textiles

a. New clothing and textiles will be much stronger and easier to care for. They will be more comfortable and will hold color better, with less yellowing and pilling.

b. Clothing and textiles will be designed for a population that has more discretionary leisure time, is more mobile, is more health conscious, and is more concerned about the environment. More research will be done on ways to use technology to better serve the future population.

c. Clothing and textiles will be designed and manufactured with the aid of the computer. This allows designs and products to be quickly produced and then changed in response to the transient nature of consumers.

d. Clothing and textiles will be designed for smaller specialized markets instead of mass markets. Technology will allow patterns, color, and design features to be changed quickly.

Clothing and Textiles
Unit 8

Assignment Sheet 1—Design Clothing for a Specialized Market

Name ______________________________ Overall Rating __________

Evaluation criteria	**Rating**
Design is original	______
Design meets needs of selected market group	______
Description and sketch are clear and thorough	______

Introduction: In order to be a good designer, you must first analyze your market to decide what their wants and needs are. This assignment will let you put your imagination to work to come up with a new design for a specialized market.

Directions: Select one of the following specialized market groups, and then design a clothing item that would appeal to them. Each of the following may be male or female. You can decide exactly who your market is. Describe your design below, why it will appeal to your market, and how it will be used. Then sketch your design on the next page.

Specialized Markets

Taller-than-average young child
Teenage physical fitness enthusiast
Environmentalist
Work-at-home parent
Overweight office worker
Teacher with arthritis
Wheelchair-bound lawyer
Retired carpenter

Description of design for ____________________ market

Assignment Sheet 1

Design sketch

Clothing and Textiles
Unit 8

Assignment Sheet 2—Evaluate Given Scenarios About How Technology Has Changed the Future Related to Clothing and Textiles

Name ________________________________ Overall Rating __________

Evaluation criteria	**Rating**
Advantages and disadvantages are appropriate	______
All responses are well-written and logical	______

Introduction: Technology is changing the clothing and textile world. Even more changes are coming. This assignment will give you the opportunity to analyze changes that may happen in the future.

Directions: Read the following scenarios, and discuss the advantages and disadvantages that you would see if each situation actually happens. Then state your conclusion of the situation, and why.

A. In the year 2000, a new fabric is invented that can not be dyed or stained. It is a natural cream color.

1. Advantages — ________________________________

   ____

2. Disadvantages — ________________________________

   ____

3. Conclusion—I think this situation would be ____________ because __________

   ____

Assignment Sheet 2

B. In the year 2030, only uniforms are worn. They are all the same style, but they are available in 3 different colors and 5 different sizes.

1. Advantages — ______________________________

   ____

2. Disadvantages — ______________________________

   ____

3. Conclusion—I think this situation would be ____________ because ________

   ____

C. In the year 2055, space suits and helmets are the only safe clothing to wear outdoors because of the extensive pollution and the loss of the ozone layer protecting Earth's atmosphere.

1. Advantages — ______________________________

   ____

2. Disadvantages — ______________________________

   ____

3. Conclusion—I think this situation would be ____________ because ________

   ____